

“AIRSEA BATTLE”:
CAN THE AIR FORCE AND THE NAVY GET ALONG?

BY
MAJOR DANIEL E. KOBS

A THESIS PROVIDED TO THE FACULTY OF
THE SCHOOL OF ADVANCED AIR AND SPACE STUDIES
FOR COMPLETION OF GRADUATION REQUIREMENTS

SCHOOL OF ADVANCED AIR AND SPACE STUDIES
AIR UNIVERSITY

MAXWELL AIR FORCE BASE, ALABAMA

JUNE 2011

DISCLAIMER

The conclusions and opinions expressed in this document are those of the author. They do not reflect the official position of the US Government, Department of Defense, the United States Air Force, or Air University.



ABOUT THE AUTHOR

Major Daniel Kobs received his commission through the Air Force Officer Training School in 1998. Rated in the MC-130P model aircraft as an evaluator navigator, he has been assigned to the 67th Special Operations Squadron, 352d Special Operations Group, RAF Mildenhall, United Kingdom, and the 17th Special Operations Squadron, 353d Special Operations Group, Kadena Air Base, Okinawa, Japan. During these tours, he flew in the European and Pacific theaters of operation and served on planning staffs at headquarters, Special Operations Command – Korea (SOCKOR) and at Joint Special Operations Task Force – Philippines (JSOTF-P). His most recent assignment was as the chief of standardization and evaluation for the 353d SOG. During this time he served as the Joint Special Operations Air Detachment (JSOAD) deputy commander for JSOTF-P. Major Kobs holds a Bachelors of Arts Degree in Political Science from the University of New Mexico and a Masters Degree in Military Operational Art and Science from the Air Force Air University. After completing Air Command and Staff College in 2009, Major Kobs attended the US Air Force's School of Advanced Air and Space Studies (SAASS) at Maxwell AFB, Alabama. After completing SAASS, Major Kobs was assigned to the Curtis E. LeMay Center for Doctrine Development and Education at Maxwell AFB.

Digital Collections
Air University—Maxwell AFB, AL

ACKNOWLEDGMENTS

I would like to acknowledge several people without whose critical support and patience I would not have completed this study. I want to thank my advisors, Doctors Sterling Pavelec and James Forsyth, for providing a critical eye during the writing of this thesis. They each provided valuable insight and really stretched my critical thinking abilities. I am most appreciative for their unending patience in the face of my many bouts with writer's block and procrastination. I would like to add my special thanks to Ms. Sheila McKitt and Ms. Kelly Rhodes for their impeccable front office support.

On the Air Staff, I would like to thank members of AF/A5XS and HAF/CK for their guidance and vector checks throughout my research. Although they often could not provide specific information, their assistance was invaluable during this project.

I would also like to say thank you to both Mr. Hill Goodspeed at the National Naval Aviation Museum at NAS Pensacola, Florida, and to Mr. Leeander Morris, JR. at the Air Force Historical Research Agency at Maxwell AFB, Alabama. Their assistance in turning up vital historical information was critical to the completion of this thesis.

Most importantly, I want to express my sincere appreciation to my wife and children for their love, patience, and understanding during those times when I was absent in spirit or in body struggling with this work. Their presence was crucial to me and made all the difference in ensuring my success.

Finally, I would like to thank God for His guidance and love during this arduous process. His gentle nudging woke me late in the night and gave me several pivotal thoughts. His gifts of wisdom and strength gave me the perseverance to achieve this lofty goal. Without His presence, I would still be sitting at square one.

ABSTRACT

Littoral waterways around the world include the principal shipping lanes and the navigational chokepoints of world commerce. The United States currently enjoys global hegemonic status and is able to project military power at will. However, the explosive growth of military technologies may soon enable America's adversaries to establish anti-access/area-denial (A2/AD) strategies to threaten maritime chokepoints. A2/AD strategies potentially limit freedom of navigation and may soon directly challenge American ability to project and sustain power globally. To meet this challenge, the US is developing a joint Air Force and Navy AirSea Battle doctrine. Inter-service collaboration between the Air Force and Navy is not without its problems due to long-standing rivalries. This study is an analysis of challenges to the development of a joint US Air Force and Navy AirSea Battle doctrinal concept. It introduces the AirSea Battle justification with a cursory examination of two of the world's maritime economic chokepoints – the Straits of Hormuz and Malacca. Potential threats from Iran and China in these areas are examined through their regional economic interests. The analysis of AirSea Battle Doctrine continues, based on individual histories of Air Force and Navy doctrinal development. A foundational understanding of the different doctrinal frames of reference of each of the services is vital; illustrations of Air Force and Navy tension and successful collaboration clarify the argument. Examples include discussion of command and control, budgetary, vernacular, and planning and collaboration lessons of failure and achievement. Finally, the conclusion includes a strategic discussion of AirSea Battle doctrine and suggests specific methods to prevent future breakdown of joint doctrinal development. It is imperative the services understand the origins of their doctrinal beliefs and their cultural values and biases, allowing each to build on the strengths and mitigate the weaknesses of the other. This understanding will help bridge the cultural divide and facilitate the outgrowth of a viable AirSea Battle Doctrine. Without this critical knowledge, and a desire to do what is best for the nation, it will be nearly impossible to create a synergistic response to any A2/AD challenge.

CONTENTS

Chapter	Page
DISCLAIMER	ii
ABOUT THE AUTHOR	iii
ACKNOWLEDGMENTS	iv
ABSTRACT	v
INTRODUCTION	1
1 AIRSEA BATTLE: THE “WHAT” AND “WHY”	4
2 US AIR FORCE DOCTRINE	15
3 US NAVY DOCTRINE	33
4 HISTORY: INTER-SERVICE RIVALRY AND COOPERATION	45
CONCLUSIONS	65
BIBLIOGRAPHY	72

Illustrations

Table

1 Strength of Naval Aviation Duty Personnel from 1917 to 1918. .	36
--	----

Figure

1 Map of the Strait of Hormuz	9
2 Map of the Strait of Malacca	10

Introduction

AirSea Battle is a very important concept by which we can, at more reasonable cost, ensure continued access to, and ability to operate in, these increasingly contested environments. By further integrating current capabilities of the US Navy and Air Force—the Nation’s two globally-postured and strategically-oriented forces—we can employ US warfighting capabilities through the air, sea, space, and cyber commons even more efficiently and more effectively.

General Norton A. Schwartz

The United States currently enjoys hegemonic status in the international arena. It is a global power and has far-reaching interests throughout the world. Since the fall of the Soviet Union, the US has utilized the global reach with resounding military success in Desert Storm, Allied Force, Enduring Freedom, and Iraqi Freedom. Potential adversaries have seen the US military’s heavy reliance on unfettered access to the global commons – sea, space, and air. Countries like China and Iran are developing weaponry and strategies to limit or restrict access to the global commons. In addition to military implications, restricted access has economic implications. A tremendous amount of goods and supplies for the countries of the world transits sea trade routes. Antagonists could seek to close or restrict these trade routes in an effort to either divert trade or gain monetary compensation for transit authority. This restriction of the freedom of navigation would necessitate a response by the US, who currently has no doctrinal plan to address such a situation. Joint US Air Force and Navy AirSea Battle doctrine will address these issues directly.

Doctrine can be very perplexing. According to the New Webster’s Dictionary, doctrine is a “principle of belief; instruction; that which is

taught.”¹ Additionally, Joint Publication (JP) 1-02, *Department of Defense Dictionary of Military and Associated Terms*, defines it as, “Fundamental principles by which the military forces or elements thereof guide their actions in support of national objectives. It is authoritative by requires judgment in application.”² More specifically, Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine*, says, “Doctrine is, after all, those beliefs, distilled through experience and passed on from one generation of airmen to the next, that guide what we do; it is our codified practices on how best to employ air and space power.”³ These definitions of doctrine range from the very general to the very specific. Doctrine may be passed from one to another through the spoken word, through demonstration, or through official documents. Although it is not at all uncommon to see written military doctrine, codification of doctrine is not inherent in the actual definition of the concept. This is noteworthy when considering the history of Air Force and Naval doctrinal development in the US.

Recently, US Air Force and Navy strategists at the Pentagon have struggled with one another to develop a joint AirSea Battle doctrinal concept. Rather than bringing another AirSea Battle proposal to the table, this study illuminates the root of the challenges faced by the Air Force and Navy in joint doctrinal development and offers some ways to mitigate those challenges. The efficacy and viability of this doctrine will be a direct result of service cooperation. To fully understand this statement, it is important to first understand the concept of AirSea Battle. Chapter 1 will offer an explanation of the AirSea Battle concept and explore the need for this new doctrinal way of warfare. It is not enough to simply understand AirSea Battle. To adequately develop the

¹ *New Webster's Dictionary*, s.v. “doctrine.”

² Joint Publication (JP) 1-02, *Department of Defense Dictionary of Military and Associated Terms*, 12 April 2001 (as amended through 30 Sep 2010), 143.

³ AFDD 1, 13.

doctrinal concept, the Air Force and the Navy must synergistically work together to capitalize on their strengths and mitigate their weaknesses. Before they can do this, they must understand their vast cultural and historical differences. A brief look into the development of their service doctrines will help illuminate the disparities between them. Chapter 2 will examine the history of Air Force doctrine as it emerged with powered flight, evolved through the World War I and World War II, and matured through the Cold War to the fall of the Soviet Union.

Awareness of the origins and growth of Air Force doctrine helps solve only a part of the problem that is inherent in joint AirSea Battle doctrinal development. Chapter 3 will focus on the development of Navy doctrine over the last 100 years from the early writings of Alfred Thayer Mahan to the present. Because service culture and identity are reflected in doctrine, a thorough understanding of these foundational elements will help identify the similarities and differences between the services. This will directly contribute to the future success of AirSea Battle doctrine development. Finally, to help inform the challenges to AirSea Battle doctrinal development, the services must look into the past at examples of their successful collaboration and sources of rivalry. Chapter 4 will first present five short historical sketches that reveal the roots of the bitter inter-service rivalry and accompanying challenges. Then it will turn to four historical examples of inter-service cooperation. Together, the combined analysis will help answer the question central to AirSea Battle doctrinal development, “Can the Air Force and the Navy get along?”

Chapter 1

AirSea Battle: The “What” and “Why”

[I]t is an old military maxim that since intentions can change overnight—especially in authoritarian regimes—one must focus on the military capabilities of other states.

Andrew F. Krepinevich

Introduction

In 2010, China surpassed Japan as the second largest economy in the world, behind only the United States.¹ The Central Intelligence Agency’s (CIA) online resource about the countries of the world, “The World Factbook,” indicates that in July of the same year, China led the world with a population of approximately 1.3 billion.² This figure is more than four times the population of the US, which is currently about 310 million.³ Also, on January 11, 2011, during a visit to Chinese President Hu by US Secretary of Defense Robert Gates, China successfully flew the prototype of its 5th generation stealth fighter aircraft, the J-20.⁴ With a burgeoning economy, such a large population, and obvious advances in military technology, China is making strides towards becoming a near-peer competitor of the United States. These trends, however, are not the only pressing concerns of the US. In a speech to the US Air Force Association in September, 2009, Secretary Gates elucidated additional

¹ Kazuo Ueda, “Japan’s Bubble, the USA’s Bubble, and China’s Bubble,” *China & World Economy* 19, no. 1 (2011): 47-62.

² Central Intelligence Agency, “The World Factbook: China,” <https://www.cia.gov/library/publications/the-world-factbook/geos/ch.html>.

³ U.S. Census Bureau, “U.S. & World Population Clocks,” <http://www.census.gov/main/www/popclock.html>.

⁴ John Pomfret, “China Tests Stealth Aircraft Before Gates, Hu Meet,” *The Washington Post*, 11 January 2011, <http://www.washingtonpost.com/wp-dyn/content/article/2011/01/11/AR2011011101338.html> (accessed 31 January 2011).

issues that US strategists must address in the near future when he stated the following:

[W]hen considering the military-modernization programs of countries like China, we should be concerned less with their potential ability to challenge the U.S. symmetrically – fighter to fighter or ship to ship – and more with their ability to disrupt our freedom of movement and narrow our strategic options. Their investments in cyber and anti-satellite warfare, anti-air and anti-ship weaponry, and ballistic missiles could threaten America’s primary way to project power and help allies in the Pacific – in particular our forward air bases and carrier strike groups. This would degrade the effectiveness of short-range fighters and put more of a premium on being able to strike from over the horizon – whatever form that capability might take.⁵

China’s population growth and drive to quickly become an economic near-peer of the US, coupled with its advances in weapons technology, may soon pose an existential threat to the US. This threat required the military services to carefully examine current warfighting doctrines to see if they were applicable in today’s international security arena. Although current joint doctrine exists, it only provides guidance and a common framework to be used as a point of departure for the inter-service coordination. It does not specifically address the unique challenges posed by AirSea Battle. Both the current doctrinal shortfalls and the exhortations of Secretary Gates gave traction to the development of AirSea Battle doctrine. In order to provide a foundational basis for the rest of this work, this chapter will first provide a brief account of AirSea Battle as it relates to its predecessor - AirLand Battle. It will then offer an overview of AirSea Battle and demonstrate its utility as a response to anti-access and area-denial strategies of potential adversaries. In doing so, it will answer the question, “What is AirSea Battle?” In the latter portion of this chapter, the focus will shift from “What is AirSea Battle?”

⁵ Robert M. Gates, Secretary of Defense, United States (address, Air Force Association Convention, Washington D.C., 16 September 2009).

to “Why is AirSea Battle so important?” Two case studies – one with Iran and the Strait of Hormuz and the other with China and the Strait of Malacca – will address this question.

What is AirSea Battle?

The idea of AirSea Battle was modeled after its close relative: AirLand Battle. AirLand Battle was a doctrine that was developed by US Army General Donn A Starry towards the end of the Cold War in response to concerns that the Soviet Union’s forces would attack US and NATO forces in Central Europe. Soviet forces were expected to operate in multiple echelons during their attack, and Starry felt US forces could more effectively engage the enemy if they could simultaneously attack the first and second echelons of troops. In order to successfully execute this plan, Air Force assets needed to work in concert with the Army ground forces. The plan was to have the Army and Air Force jointly engage the first echelon front line troops while Air Force assets simultaneously engaged second echelon rearward troops. He coined the term “AirLand Battle” to portray the need for a cooperative effort.⁶ Chapter 2 will address some of the significant challenges this innovative doctrinal proposal faced.

Like its older brother, AirSea Battle is a doctrinal plan intended to harmoniously marry US and allied naval and air forces to create a flexible team to project power. In contrast to AirLand Battle, AirSea Battle doctrine is being designed such that naval and air forces can effectively operate in regions bereft of large land masses, like the Western Pacific. It is a concept that has gained a lot of attention over the last decade due to both a rising awareness that the US now faces unique power projection challenges, and to the proclivities and geographic locations of potential enemies of the US. Andrew Krepinevich, a leading

⁶ Harold R. Winton, “Partnership and Tension: The Army and Air Force Between Vietnam and Desert Shield,” *Parameters Magazine* 26, no. 1 (Spring 1996): 104-108.

strategist and AirSea Battle proponent at the Center for Strategic and Budgetary Assessments (CSBA), identifies the power projection challenges in the following way: “[T]here is a growing challenge in the military dimension of power-projection operations. This is particularly true with respect to the traditional form of US power-projection operations, which involves deploying and sustaining air and ground forces at or through major ports and airfields. For maritime forces, power projection now implies moving into the littoral to influence operations inland on a far greater scale than was the case only a few decades ago.”⁷

These power projection challenges are further exacerbated by anti-access (A2) and area-denial (AD) strategies possessed by potential adversaries. First, A2 strategies involve an adversary attempting to prevent US forces from entering a theater of operations. An adversary can accomplish this by utilizing existing commercial and national satellite technologies and, along with the proliferation of medium-range missile technology, watch troop and equipment movements and target fixed locations. A2 strategies provide a stand-off capability against the forces on which they are used. Absent a robust missile defense, this is a very real threat to future US deployments.⁸

AD strategies also pose complications to deployments. “If A2 strategies aim to prevent US forces entry into a theater of operations, then AD operations aim to prevent their freedom of action in the more narrow confines of the area under an enemy’s direct control.”⁹ These extend to enemy actions in the air, on land, and on the sea. China’s J-

⁷ Andrew F. Krepinevich, Barry Watts, and Robert O. Work. *Meeting the Anti-Access and Area-Denial Challenge*, (Washington, D.C.: Center for Strategic and Budgetary Assessments, 2003), 3. “

⁸ For a thorough explanation of A2, see Major John V. Bartoli, “Bending the Eagle’s Wing: How Advanced Air Defenses Put the Enemy’s Vital Centers Beyond the Reach of American Airpower,” Graduation Thesis, School of Advanced Air and Space Studies, Air University, June 2010.

⁹ Krepinevich, *Meeting the Anti-Access and Area-Denial Challenge*, 5.

20 stealth aircraft is a demonstration to its commitment to an aerial AD capability. Integrated air defenses are the partner of an enemy's air forces and they round out the aerial AD capability. Land AD capabilities are comprised of any systems that preclude US land forces from utilizing insertion points. Some of these include artillery, mine fields, and chemical agents. Finally, maritime AD threats are those that seek to prevent the use of maritime assets within a theater of operation – either at long-range or close to shore. Maritime AD threats include anti-ship missiles, submarines, mines, and surface attack vessels.¹⁰ AirSea Battle, then, is the response to these challenges posed by potential enemies who are technologically adept and maintain significant influence over a predominantly aerospace and maritime domain.

Why is AirSea Battle so Important?

There are several narrow channels around the globe that are used as economical sea routes for trade. Some of these channels are narrow enough that there are size restrictions on the vessels that can transit. These geographically restricted sea trade lanes essential to global energy security are more commonly called chokepoints. Two examples of such chokepoints are the Strait of Hormuz, which is located between Oman and Iran; and the Strait of Malacca, which is located between Singapore, Malaysia, and Indonesia. The importance of each of these will be discussed in turn below.

The Strait of Hormuz (Figure 1) is the chokepoint that links the Gulf of Oman and the Arabian Sea with the Persian Gulf. At its narrowest point, Hormuz is about 21 miles wide, but its shipping lane in and out of the Persian Gulf is only two miles wide and is separated by a two-mile buffer zone. A 2009 estimate shows that approximately 33 percent of all oil traded across the seas travels through Hormuz. This

¹⁰ Ibid., 5.

equates to about 17 percent of oil traded worldwide.¹¹ Additionally, 90

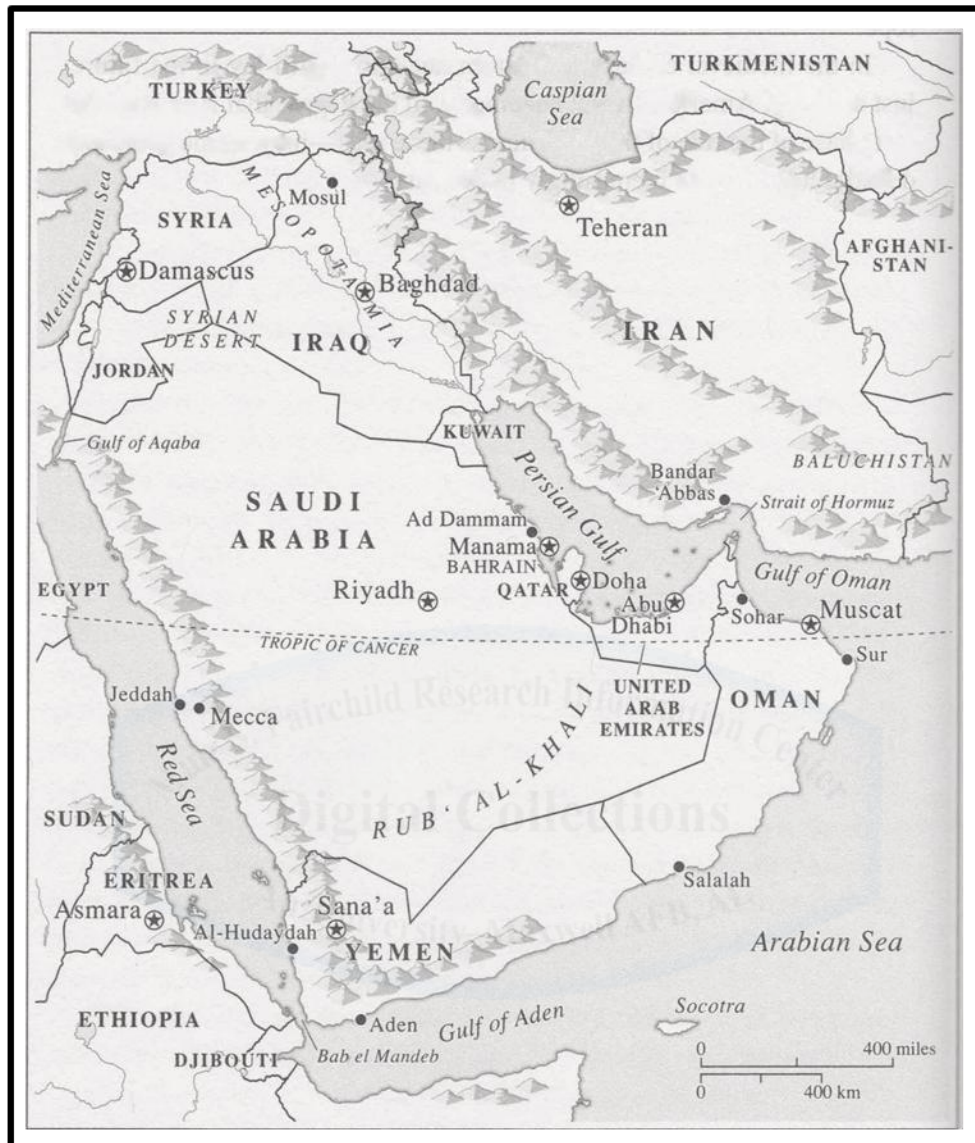


Figure 1: Map of the Strait of Hormuz

Source: Robert A. Kaplan, *Monsoon*, (New York, NY: Random House, Inc.), 32.

percent of the US daily requirement for crude oil is imported from 15 countries worldwide. Three of those countries accounting for one-fifth of

¹¹ US Energy Information Administration, "Country Analysis Briefs: World Oil Transit Chokepoints," US Department of Energy, http://www.eia.doe.gov/cabs/World_Oil_Transit_Chokepoints/Full.html (Accessed 13 February 2011).

that daily number – Saudi Arabia, Kuwait, and Iraq – are on the Persian Gulf and must ship their exports through the Strait of Hormuz.¹²

These figures demonstrate the importance of this strategic location not only to the United States, but also to the world.



Figure 2: Map of the Strait of Malacca

Source: Robert A. Kaplan, *Monsoon*, (New York, NY: Random House, Inc.), 260.

Another important strategic chokepoint to the world's oil transport, and

¹² US Energy Information Administration, "Crude Oil and Total Petroleum Imports Top 15 Countries," US Department of Energy, http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/company_level_imports/current/import.html (accessed 13 February 2011).

shipping in general, is the Strait of Malacca (Figure 2). At its narrowest, it is a mere 1.7 miles wide – a critical juncture between the Pacific Ocean and the Indian Ocean and the South China Sea. It is the most direct sea trade route between the Persian Gulf and Asia and the Pacific Rim.

Japan and South Korea – Pacific allies of the US – receive substantial amounts of their petroleum requirements through Malacca. Also of note, China relies heavily on oil shipments from the Persian Gulf and, because of its proximity to the Strait of Malacca, it has a significant strategic interest in this chokepoint.¹³ Defense strategists look towards a possible future where China takes control of this global maritime transit point to help assert itself as a regional great power. If transit was restricted through this strategic location, circumnavigation is possible. To navigate around the Strait of Malacca, though, would require a much greater investment in time and expense. This restriction of freedom of navigation is unacceptable – both for the US and its allies in the region. These two examples of world oil transit chokepoints, which are critical to global freedom of maneuver and foster global security, help lay the foundation for the importance of AirSea Battle doctrine.

Near the turn of the 20th century, in his book *The Influence of Sea Power Upon History: 1660-1783*, naval strategist Alfred Thayer Mahan made a statement that was applicable then, as now: “If, in addition to facility for offence, Nature has so placed a country that it has easy access to the high sea itself, while at the same time it controls one of the great thoroughfares of the world's traffic, it is evident that the strategic value of its position is very high.”¹⁴ As Krepinevich points out in *Why AirSea Battle?*, as advanced military technologies spread, countries like Iran and

¹³ US Energy Information Administration, “Country Analysis Briefs: World Oil Transit Chokepoints,” US Department of Energy, http://www.eia.doe.gov/cabs/World_Oil_Transit_Chokepoints/Full.html (Accessed 13 February 2011).

¹⁴ Alfred Thayer Mahan, *The Influence of Sea Power Upon History: 1660-1783* (Boston, MA: Little, Brown and Company), http://www.gutenberg.org/catalog/world/readfile?fk_files=1491983.

China are increasingly seeking the ability to challenge the US military's capacity to preserve military access to the Western Pacific and the Persian Gulf.¹⁵ In 2006, Iran conducted a series of exercises in the Persian Gulf, the Strait of Hormuz, and the Sea of Oman which demonstrated the importance of Iran's naval power and revealed a developing A2/AD strategy. Its navy is seeking advancements in both surveillance systems and missile capabilities to increase abilities to defend interests in the Persian Gulf. Further, growing emphasis on mine warfare coupled with the aforementioned naval developments is indicative of an area denial potential in the Strait of Hormuz.¹⁶ Because one fifth of the world's oil is shipped through Hormuz, the Iranian government's repeated threats to close or disrupt shipping through the chokepoint have garnered the attention of many in the world. These threats have helped provide impetus for the development of the US AirSea Battle doctrine.

Perhaps of greater concern are the Strait of Malacca and China. China, as mentioned above, has recently experienced tremendous economic growth. It is a nation that is historically non-transparent in its motivations for defensive build up, and has not embraced democracy. Its sheer size, in land mass and in numbers of people, along with its ability to indigenously produce modern weapons systems, make it a very credible threat to American interests and its allies in the Pacific. The Chinese economy is currently sustaining its population and military developments. China's close proximity to the Strait of Malacca, and the accompanying economic benefits that are possible with its control, make it a very lucrative target for exploitation. In order for China to embark on a plan to capture and control Malacca, they would need to limit or deny

¹⁵ Krepinevich, *Why AirSea Battle?*, vii.

¹⁶ Bill Samii, "Iran: Naval Doctrine Stresses 'Area Denial,'" Washington, D.C.: Radio Free Europe/Radio Liberty (2006), 1.

significant access to the Pacific of credible adversaries – namely the United States. In order to do so, China requires a viable A2/AD strategy.

After extensive research and analysis of Chinese writings on military strategy – including books on military doctrine, articles from Chinese military journals, reports from Chinese military newspapers, and some Western studies of Chinese strategic thinking – RAND defense analysts arrived at the following conclusion: “[T]he PLA [People’s Liberation Army], despite the considerable progress it has made in recent years, still lags behind the U.S. military in terms of technology, doctrine, training, and experience and that any conflict against the U.S. military will pose extreme challenges. To defeat a technologically superior enemy, such as the United States, the PLA has focused on devising strategies that maximize China’s relative strengths and that create opportunities to exploit adversary weaknesses.”¹⁷

To exploit these weaknesses, China could utilize a number of A2 techniques. First, they could pressure countries with potential forward operating bases to deny a US ability to use them as troop and equipment staging locations. They could also attack and exploit US information systems that facilitate troop movements to disrupt communications and logistic lines of operation in an effort to delay deployments. Additional methods that the Chinese could use to prevent the US easy access to the Pacific are computer network attack and jamming. Without the aid of computer networks, US military deployability could be greatly hampered. Further, China could directly target forward staging bases with medium-range missiles, utilize anti-ship missiles and torpedoes to attack surface and sub-surface US naval vessels. As a very extreme measure, they could deploy a nuclear electromagnetic pulse (EMP) weapon to disrupt or destroy electronic systems.¹⁸ This list is not all-inclusive, but represents

¹⁷ Roger Cliff et al., *Entering the Dragon’s Lair: Chinese Antiaccess Strategies and Their Implications for the United States* (Santa Monica, CA: RAND Corporation, 2007), xv.

¹⁸ Roger Cliff et al., *Entering the Dragon’s Lair*, xvi-xvii.

examples of China's viable A2 capabilities. If the US perceived these as a significant threat to its global security interests, China's actions could precipitate an AirSea Battle response by the US military. It is for just such a possibility that the services must collaborate on a cohesive AirSea Battle doctrine.

Conclusion

As advanced technologies propagate throughout the world, and as potential enemies of the US obtain them and seek their use for anti-access and area-denial strategies, the US must face the hard truth that these directly challenge power projection capabilities. It is imperative that the US develop and utilize a coherent doctrine that will enable it to meet these challenges across aerospace and maritime domains. This doctrine is AirSea Battle. The real hurdle lies less with the US defense establishment's ability to identify the enemy and its capabilities. The critical challenge that confronts the forward progression of the AirSea Battle imperative is the collaboration and cooperation of the sister services – the US Air Force and the US Navy. Without a coordinated effort to develop and then execute AirSea Battle doctrine, the US faces a potential future where it is unable to project power and adequately defend its allies who are in predominantly maritime domains. Chapter 2 will first offer an analysis of the evolution of Air Force doctrine from the Wright brothers' first historic flight to the present. It will then briefly concentrate on the development of AirLand Battle doctrine and the challenges that faced the Army and Air Force at the height of the Cold War. AirLand Battle provides many lessons from which the Air Force and Navy may learn about the challenges of joint doctrine. The AirLand Battle doctrinal lessons and the vast differences between Air Force and Navy doctrine will begin to illuminate the depth of these challenges.

Chapter 2

US Air Force Doctrine

At the very heart of warfare lies doctrine. It represents the central beliefs for waging war in order to achieve victory. Doctrine is of the mind, a network of faith and knowledge reinforced by experience which lays the pattern for the utilization of men, equipment, and tactics. It is the building material for strategy. It is fundamental to sound judgment.

General Curtis E. LeMay

Introduction

After the Wright brothers' momentous first flight at Kitty Hawk on December 17, 1903, powered flight really began to take off around the globe. Man's desire to conquer the air fueled an intense drive to build better, more capable machines for flight. Over the next two decades, the machines became more reliable and, during the turbulent years of World War I, their military utility was revealed. "[T]he small, fragile airplane quickly proved itself as a means of reconnaissance and artillery spotting in 1914, and by 1918 its missions had expanded to include aerial fighting, ground attack, and tactical and ultimately strategic bombing."¹ The exploits of German pilot Manfred Freiherr von Richthofen – the "Red Baron" – and US pilot Eddie Rickenbacker became tales of legend. In the US, the military services saw the value of these new winged machines, and scrambled to adopt and utilize them in service-specific ways. This gave birth to the first US air power doctrines. This chapter will explore the development of American air power doctrine over the course of the last century. Then it will present a short synopsis of the development of

¹ John Andreas Olson, ed., *A History of Air Warfare* (Dulles, VA: Potomac Books, Inc., 2010), 1.

AirLand Battle doctrine and, through its challenges and successes, will demonstrate the AirLand Battle doctrinal relevance to the AirSea Battle doctrine discussion.

Air Force Doctrine

US Air Force aviation found its roots in the Aeronautical Division of the US Army Signal Corps formed on August 1, 1907. The Signal Corps accepted its first airplane from the Wright brothers in 1909. On July 18, 1914, the Army established the Aviation Section of the Signal Corps to begin developing its fledgling flight program. Shortly thereafter, World War I started in Europe and the US found its aviation industry far inferior to those in Europe. In an effort to boost US aviation capabilities, on May 24, 1918, President Woodrow Wilson created the Army Air Service and made it subordinate to the War Department. Finally, the Army Reorganization Act of 1920 made the Air Service a part of the Army, and on July 2, 1926, the Air Corps Act of 1926 changed the Air Service's name to the Air Corps.² Those pilots who flew during the war gained valuable experience and were in a very good position to work towards the development of aviation doctrine.

Early US air power doctrine was built upon the precepts set forth by Italian air power theorist Giulio Douhet. Douhet commanded one of Italy's first army air units and directed the army's Aviation Section. He is credited with being the first to write a coherent air power theory with *The Command of the Air*, published in Italian in 1921. He argued that aircraft changed the very character of warfare. According to Douhet, airpower involved the use of the space above the earth's surface to be decisive in ground campaigns. To accomplish this, air forces needed to obtain command of the air. He defined this in the following way: "To have command of the air means to be in a position to prevent the enemy

² US Air Force, "History: Missions Part One – From the Signal Corps to the Air Corps," <http://www.airforce.com/learn-about/history/part1/> (accessed 15 February 2011).

from flying while retaining the ability to fly oneself.”³ Douhet sought an independent air service that was not subordinate to the army or the navy. It was his contention that aircraft were solely offensive tools, and because of their speed and mobility there was no real defense against their bomber offense. In Douhet’s opinion, the inherent abilities of aircraft enabled them to be singularly decisive in conflict. “Such offensive actions can not only cut off an opponent’s army and navy from their bases of operations, but can also bomb the interior of the enemy’s country so devastatingly that the physical and moral resistance of the people would also collapse.”⁴ To Douhet, command of the air equaled victory.

A very vocal proponent of air power in the US Army Air Corps, and somewhat parallel thinker to Douhet, was Brigadier General William “Billy” Mitchell. In his 1925 book, *Winged Defense: The Development and Possibilities of Modern Air Power – Economic and Military*, he provided the basis for his theory of air power: “The theory is to show that aeronautics can establish airways anywhere in the world and be able to operate from them; that wherever air power can operate, it can dominate sea areas against navies, and land areas against armies; that aircraft can establish the most rapid communication ever known between all of the great centers of population of the world and to the most remote and inaccessible points.”⁵

Similar to Douhet, Mitchell advocated an air arm of the military that was independent of the Army and the Navy. He did not want the air force to replace the Army, as he recognized the need for troops on the ground. He did, however, “believe that the air force will control all the

³ Giulio Douhet, *The Command of the Air*, ed. Joseph Patrick Harahan and Richard H. Kohn and trans. Dino Ferrari (Tuscaloosa, AL: The University of Alabama Press, 1998), 24.

⁴ Giulio Douhet, *The Command of the Air*, 25.

⁵ William “Billy” Mitchell, *Winged Defense: The Development and Possibilities of Modern Air Power – Economic and Military* (Tuscaloosa, AL: The University of Alabama Press, 2009), 34.

communications, and that it will have a very great effect on the land troops, and a decisive one against a navy.”⁶ It was somewhat easy to appreciate the impact that air power could have on land forces and land-based targets, but the impact it could have on maneuverable naval vessels was less obvious. Mitchell was such a believer in the power of aerial bombing against ships that he challenged the Navy to allow him to prove this capability. In 1921, the Navy finally agreed and provided two captured German WWI warships for a test off the East Coast of the US. In *Winged Defense*, Mitchell recalls, “It is an amusing fact that the Secretary of the Navy at that time announced that these things could not be done and that he was willing to stand on the bridge of the ship while we bombed it.”⁷ Fortunately for the Secretary, he did not choose to do that, because “on 18 and 21 July the brigade successfully attacked and sank the cruiser *Frankfort* and the battleship *Ostfriesland*.”⁸ Mitchell’s success provided support for his assertion that the US needed to establish an air force separate from the Navy and the Army. It also gave credence to his declaration that air power was capable of precision bombing and that it could protect the shores of the US from sea-borne enemy attack. This powerful demonstration of aerial bombardment, however, became the source of a long-standing tension between the Air Force and the Navy, a tension that will be further examined in chapter 4.

During this time, the Army Air Service established a school for the study of air doctrine and tactics. It originally opened in Langley, Virginia, as the Air Service Field Officers School, and underwent several name changes until 1926, when the Army Air Service became the Army Air Corps. Then, in 1931, it relocated to Maxwell Field, Alabama, as the Air Corps Tactical School (ACTS). ACTS taught air tactics, strategy and

⁶ Robert Frank Futrell, *Ideas, Concepts, Doctrine*, vol. 1, *Basic Thinking in the United States Air Force 1907-1960*, 1989, third printing (Maxwell Air Force Base, AL: Air University Press, September 2001), 37.

⁷ Mitchell, *Winged Defense*, 42.

⁸ Futrell, *Ideas, Concepts, Doctrine*, vol. 1, 37.

doctrine as they applied to pursuit, bombardment, attack, and observation aviation.⁹ In 1926, the school published *Employment of Combined Air Force*.¹⁰ This document deviated from previously held beliefs that an enemy's capital, resources, and industrial centers were not adequate military objectives for military forces. It contended that "the air force operated in three dimensions and could terrorize the whole population of a belligerent country while at the same time conserving life and property of both friend and foe to the greatest possible extent."¹¹ Targets included centers of production, including aircraft assembly plants; transportation and rail systems; shipping and ports; and petroleum and electric power systems. Earlier pursuit doctrine developed for observation aircraft during WWI was replaced by strategic bombing and interdiction.

As this doctrinal shift was carried into World War II, the US Army Air Corps slowly gained more independence. "On June 20, 1941, the Department of War created the Army Air Forces (AAF) as its aviation element and shortly thereafter made it coequal to the Army Ground Forces. The Air Corps remained as one of the Army's combat arms, like the infantry."¹² As the Army Air Forces continued to gain more service independence, strategic bombing doctrine gained momentum. At the opening of World War II, air war planners sought to codify some of the earliest air power doctrine. In August, 1941, they produced Air War Plans Division-1 (AWPD-1), "Munitions Requirements of the Army Air Force." The basis of the document contained the tasks for the US air forces to wage a sustained air offensive against Germany. These specific tasks were the following: reduce Axis surface and sub-surface

⁹ Robert T. Finney, *History of the Air Corps Tactical School 1920-1940* (1955; repr., Bolling AFB: Air Force History and Museums Program, 1998), v.

¹⁰ Futrell, *Ideas, Concepts, and Doctrine*, vol. 1, 62.

¹¹ Finney, 63.

¹² US Air Force, "History: Missions Part Two – Air Power Comes of Age in World War II," <http://www.airforce.com/learn-about/history/part2/> (accessed 15 February 2011).

operations; restrict Axis air operations; undermine German combat effectiveness by deprivation of essential supplies, production, and communication facilities; and permit and support a final invasion of Germany.¹³ The document further clarified the accomplishment of the tasks through three lines of action. The first line of action was designed to accomplish the air mission in Europe. It was characterized by the disruption of a major portion of the electrical power system of Germany, disruption of the German transportation system, destruction of the German oil and petroleum system, and undermining of German morale by air attack of civil concentrations. The second line of air action involved attack of German air forces. These attacks centered on German air bases, aircraft factories, and aluminum and magnesium factories. Finally, the third line of air action required air forces to attack German maritime assets. The focus of these attacks was German submarine bases, surface sea craft, and potential invasion bases.¹⁴ These were all to be accomplished using daylight strategic precision bombing attacks.

Following the development of AWPDP-1 and its revisions in AWPDP-42, WWII was marked by strategic bombing campaigns like the Combined Bomber Offensive over Germany and the fire bombings of Japan in the Pacific theater. These culminated with the use of atomic weapons against Hiroshima and Nagasaki, Japan. There is much controversy about the use of atomic weapons in WWII. Such devastation was never before experienced from the delivery of a single explosive device. Some believe that their use directly led to Japan's surrender, but this belief is highly contested. According to Robert A. Pape in *Bombing to Win: Air Power and Coercion in War*, Japan's decision to surrender developed over time, and it occurred coincidentally with the use of atomic weapons. By the time the US used atomic weapons, more than 800,000

¹³ Air Warfare Plans Division (AWPD) 1, *Munitions Requirements of the Army Air Force*, August 1941, pt. 1, 5.

¹⁴ AWPDP-1, *Munitions Requirements of the Army Air Force*, pt. 2, tab 1, 2-3.

Japanese civilians had been killed and over 20 million were homeless. Much of this death and displacement resulted from US incendiary bombings of sixty-four of Japan's major cities.¹⁵ Despite their incredible impact, atomic bombs are only one variable in the end of the war in the Pacific. There does appear, however, to be a correlation between their strategic use and the timing of the surrender of the Japanese in World War II.

In the *Third Report of the Commanding General of the Army Air Forces to the Secretary of War*, General Henry H. "Hap" Arnold said the following: "Without attempting to minimize the appalling and far-reaching results of the atomic bombs, we have good reason to believe that its actual use provided a way out for the Japanese government. The fact is that the Japanese could not have held out long, because they lost control of their air. They could not offer effective opposition to our bombardment, and so could not prevent the destruction of their cities and industries."¹⁶ This connection was adequate for strategic bombing advocates. They touted the importance of command of the air and proclaimed the decisive ability of strategic bombing to bring wars to an end. This not only gave the Army Air Forces the right catalyst for the creation of the Air Force as a separate service in 1947, but also laid the foundation for continued development of strategic bombing doctrine to the end of the 20th Century.

Interestingly, in summer 1946, *before* the Air Force gained its independence, Air University was founded out of the roots of the Air Corps Tactical School at Maxwell Field in Montgomery, AL. Its mission statement included, "reviews, revises, and prepares publication of AAF basic doctrine...Develops basic doctrines and concepts for employment of

¹⁵ Robert A. Pape, *Bombing to Win: Air Power and Coercion in War* (Ithaca, NY: Cornell University Press, 1996), 127-129.

¹⁶ Futrell, *Ideas, Concepts, Doctrine*, vol. 1, 167. Gen Henry H. Arnold, *Third Report of the Commanding General of the Army Air Forces to the Secretary of War*, 12 November 1945, 36.

air power.”¹⁷ Also in 1946 at Air University, the Air War College (AWC) was established and given the responsibility to revise Field Manual (FM) 100-20, *Command and Employment of Air Power*. Originally written in 1943, this manual was the precursor to Air Force service doctrine and it held an antiquated notion that air power and ground power were coequal and interdependent. It stated that there should be an air commander and a ground commander. This old notion of air power’s use , along with the creation of an independent Air Force by the National Security Act of 1947 drove the deputy assistant chief of air staff for operations, Brig Gen Thomas S. Power, to direct the Air University to rapidly codify air doctrine for the air service.¹⁸

Therefore, after many fits and starts over about six years, the Air University produced the Air Force’s first doctrinal manual on April 1, 1953. It was designated as Air Force Manual (AFM) 1-2, *United States Air Force Basic Doctrine*, only 17 pages long in five chapters. This air power doctrine document emphasized control of the air to enable protection of the US and execution of warfare abroad. It stated, “Of the various types of military forces, those which conduct air operations are most capable of decisive results. This preeminence accrues to them because of their versatility – with or without armed conflict – and because their capabilities permit them to be employed wherever necessary. They provide the dominant military means of exercising the initiative and gaining decisions in all forms of international relations, including full peace, cold war, limited wars of all types, and total war.”¹⁹ Further, it served as the codified beginning of the Air Force’s propensity to focus on nuclear weapons as a viable way to conduct air warfare.²⁰

¹⁷ Futrell, *Ideas, Concepts, Doctrine*, vol. 1, 365.

¹⁸ Futrell, *Ideas, Concepts, Doctrine*, vol. 1, 367.

¹⁹ Air Force Manual (AFM) 1-2, *United States Air Force Basic Doctrine*, 1 Apr 1955, 10.

²⁰ Johnny R. Jones, *Development of Air Force Basic Doctrine 1947-1992*, (Maxwell Air Force Base, AL: Air University Press, April 1997), 4.

Most assuredly this arose in response to new developments in the Soviet Union.

After the Soviet Union developed and detonated their atomic bomb in 1949, the main thrust of strategic bombing doctrine began to change. The newly created Air Force competed with the Navy and the Army to see which service could be more capable with a strategic intercontinental nuclear attack doctrine. The very same characteristics of the aircraft as espoused by Mitchell himself – global reach, mobility, and flexibility – were those that made the Air Force the best suited service to hold at bay the potential Soviet nuclear threat. Although both Tactical Air Command (TAC) and Strategic Air Command (SAC) were created in 1946 to employ the doctrinal tenets of air power, it was SAC and its accompanying doctrine that emerged dominant over TAC throughout the Cold War.

The air power doctrine followed by TAC was inherent in its mission statement: “Tactical Air Command would ‘provide for Air Force cooperation with land, naval, and/or amphibious forces,’” but as Robert Futrell points out in volume one of *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force 1907-1960*, “[t]he vague wording of the Tactical Air Command’s mission statement reflected a general uncertainty of Army-Air Force relationships.”²¹ General J. Lawton Collins, Army chief of staff in 1950, did not like the coequal status of air and ground forces, and he believed that this air-to-ground doctrinal focus should enable “Army commanders, down to corps level in some instances, [to] exercise operational control of close air support. He also recommended that the Army ought to participate in determining the requirements for close air support aircraft...”²² These types of opinions were unpopular within the Air Force, and with the imminent threat posed by the spread of communism and the Soviet nuclear arsenal, TAC

²¹ Futrell, *Ideas, Concepts, Doctrine*, vol. 1, 308.

²² Futrell, *Ideas, Concepts, Doctrine*, vol. 1, 308.

and its accompanying doctrinal precepts took a back seat to those of SAC.

The newly created Air Force suffered from an inferiority complex as the youngest service, and as such, continued to develop doctrine in such a way as to foster service independence. This, along with an enemy threat that existed halfway around the globe, was the perfect recipe for the creation of SAC. In the face of the unpopular views that air forces should be subordinate to the ground forces of the Army, and as technology progressed, both in aircraft production and in the improvement of nuclear weapons, SAC and its air power doctrinal views rose to prominence in the Air Force. "In its mission statement, the Strategic Air Command was charged to conduct long-range operations in any part of the world at any time; to perform maximum long-range reconnaissance over land or sea; and to provide combat operations in any part of the globe, employing the latest and most advanced weapons."²³ This mission was very well suited for the ardent supporters of the newly independent Air Force. It dovetailed nicely into the strategic bombing doctrine that was developed by early air power theorists and was put into practice in World War II. Strategic bombing doctrine became the central pillar to the existence of the Air Force. As Caroline Ziemke looks back over the Cold War Air Force air power in Vietnam, she states, "Strategic bombing is not mere doctrine to the USAF, it is its lifeblood and provides its entire *raison d'être*. Strategic bombing is as central to the identity of the Air Force as the New Testament is to the Catholic church. Without the Gospels there would be no pope; and without strategic bombing there would be no Air Force."²⁴ This is an accurate summation of the prevailing air power doctrine from the end of WWII to the end of the 20th Century.

²³ Futrell, *Ideas, Concepts, Doctrine*, vol. 1, 207.

²⁴ Carolyn Ziemke, "Foreward," in Earl H. Tilford, *Setup: What the Air Force Did in Vietnam and Why* (Maxwell AFB, AL: Air University Press, 1991), ix.

US proxy wars against communism in both Korea and Vietnam challenged the primacy of strategic bombing doctrine. Each conflict contained elements of both strategic and tactical use of air power. The US was so focused on strategic air power that the majority of contemporary aircraft were developed as long-range nuclear delivery platforms. As a result, there was a lack of tactical air assets. In the summary of his research on the development of Air Force doctrine from 1947-1992, Lieutenant Colonel Johnny Jones states the following about the use of air power in the context of these proxy wars: “Numerous historians have documented how the Air Force planned and built its post-World War II and post-Korean War force structure around strategic bombing and strategic bombers, while forsaking tactical airpower. As Professor I. B. Holley remarked in a 1974 lecture, ‘The failure to exercise rigorous thinking caused the whole service to suffer. The Air Force had little to offer in Vietnam except a return to its pre-World War II thinking. Consequently, airpower was misused, and pilots often flew the wrong kinds of missions in the wrong kinds of aircraft.’”²⁵

Though lessons about tactical use of air power were available for incorporation into Air Force air power doctrine, they were predominantly overlooked for two reasons. First, the Air Force had its driving need to continue to justify its independence because of its youth as a service. The second reason was the elephant in the room – the nuclear force of the Soviet communist regime. In doctrine from 1953 through 1984, “[t]he Air Force consistently focused doctrine on a large-scale, generally nuclear war against an industrialized adversary.”²⁶ The criticality of tactical incorporation of air power in support of Army ground units in AirLand Battle doctrine of the 1970’s and ’80’s precipitated the doctrinal focus-shift away from strategic air power and gave rise to the tactical

²⁵ Jones, *Development of Air Force Basic Doctrine 1947-1992*, 33-34.

²⁶ Jones, *Development of Air Force Basic Doctrine 1947-1992*, 33.

fighter generals. The dissolution of the Soviet Union and the success of US air power in the Gulf War in 1990-1991 cemented this change.

The collapse of the Soviet threat necessitated a thorough review of air power doctrine. There was no longer a significant nuclear threat to the US and technology advanced to such an extent that precise delivery of munitions on the battlefield was now possible. The Gulf War provided a superb opportunity for air power to use non-nuclear, precision conventional weapons in a decisive fashion against an enemy. In the four days, air power delivered a devastating blow. "The opening coalition attacks against Iraq's command and control facilities and integrated air defenses proved uniformly successful, with some 800 combat sorties launched in the blackness of night in radio silence against Iraq's most militarily critical targets...[T]he air campaign struck at the entire spectrum of Iraq's strategic and operational assets, gaining unchallenged control of the air for the coalition and the freedom to operate with near impunity against Iraq's airfields, fielded ground forces, and other targets of military interest."²⁷ Air power was utilized with such great success prior to insertion of the ground forces that air power proponents felt it nearly alleviated the need to utilize ground forces altogether. "[T]he Gulf war marked the apotheosis of twentieth-century air power."²⁸

The resounding success of the application of air power in the post-Cold War era precipitated a change in the focus of air power doctrine. As late as November 2003, the Air Force presented more tactically and strategically balanced doctrine in its release of the Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine*. This document presents a doctrinal list of the principles of war that are aligned with those found in

²⁷ Benjamin S. Lambeth, *The Transformation of American Air Power* (Ithaca, NY: Cornell University Press, 2000), 3.

²⁸ Quoted in Lambeth, *The Transformation of American Air Power*, 3. This was a statement made by retired Royal Air Force (RAF) Air Vice Marshal Tony Mason about the predominant view of air power after the Gulf War. Air power advocates believed that air power now held an almost godlike status in conventional warfare.

joint publications. These include: unity of command, objective, offensive, mass, maneuver, economy of force, security, surprise, and simplicity. Further, it offers a list of distinct capabilities of air power that spans the tactical-strategic gap: air and space superiority, information superiority, global attack, precision engagement, rapid global mobility, and agile combat support.²⁹ Together, these offer an air power-centric view of warfare. Though AFDD-1 acknowledges the importance of the other services, it focuses heavily upon air power to prosecute warfare. More specific incorporation of sister services' capabilities is conspicuously absent. Presumably this is because AFDD-1 is the Air Force's foundational book of doctrine. Its lessons and doctrinal tenets were gleaned from the study of historical successes and failures in the applications of air power. It leaves the door open, though, for the development of joint doctrines to synergistically bring US military power to bear against the enemy. A brief look back at the joint Air Force and Army AirLand Battle doctrine development will inform the AirSea Battle doctrine discussion.

AirLand Battle Doctrine

As mentioned in chapter 1, AirLand Battle was a doctrine that was developed by US Army General Donn Starry to protect and defend US and NATO interests in Central Europe in case of Soviet Union attack. "The scope and intensity of the AirLand Battle project reflected the seriousness with which the Army, since the early 1970s, had regarded the technological edge which the Soviet Union gained during that decade in the tactical weaponry of its numerically stronger forces opposite NATO's Allied Command in Europe."³⁰ The Army recognized the critical importance of using technological advancements in firepower to replace

²⁹ Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine*, 17 Nov 2003, 20 and 76.

³⁰ John L. Romjue, *From Active Defense to AirLand Battle: The Development of Army Doctrine, 1973-1982* (Fort Monroe, VA: United States Army Training and Doctrine Command, June 1984), 1.

deficits in manpower. In order to do this in the face of a potentially massive Soviet invasion, the Army birthed the idea of active defense whereby it used maneuver to concentrate manpower and firepower when needed. At the heart of this idea was the Army's desire to win the first battle. In the past the US took too long to mobilize its assets, and Army leaders were concerned that the next war would be short and intense. They feared its outcome would be decided by the consequences of the first battle. Some of the tools the Army needed to win this first battle were mobile tank and mechanized infantry battalions, self-propelled artillery, attack helicopters, air-mobile antiarmor weapons, and close air support aircraft. The inclusion of air-mobile antiarmor weapons and close air support (CAS) aircraft coupled with the Army's desire for deep, strategic attack at the enemy's rear required coordination with the Air Force to develop a joint doctrine.³¹ Although it is not the centerpiece of this discussion on AirSea Battle and doctrine, a brief discussion of the development of AirLand Battle doctrine provides a historical example of the challenges of cooperation among military services.

The first significant challenge to collaboration that faced the Army and Air Force was their difference in service doctrine development. In 1973, the Army created the Training and Doctrine Command (TRADOC) to develop its service-wide doctrine. This ranged from fundamental, strategic doctrine to tactical, unit-level doctrine. The TRADOC construct varied significantly from that of the Air Force. Air Force doctrine was developed at three different levels. The first level, basic doctrine, was written at the Air Staff. Development of the next level of doctrine, operational doctrine, fell under the purview of the major subordinate commands. Finally, different schools, agencies, and units developed the third level of doctrine – tactical doctrine. This disparity in the way both services developed doctrine created a communication gap between them.

³¹ Romjue, *From Active Defense to AirLand Battle*, 9.

Because its air assets flew CAS missions, the Air Force Tactical Air Command (TAC) needed to communicate with TRADOC for the development of joint doctrine that involved CAS. Although this might seem to be an easy fit, TAC did not have the authority to develop joint doctrine for the Air Force.³² Communication became a major hurdle the services faced in AirLand Battle doctrinal development.

The Army's 1976 release of its doctrinal publication Field Manual (FM) 100-5, *Operations*, was the next challenge that impeded service cooperation. Not only did this manual emphasize the importance of winning the first battle, but it also included a chapter entitled "Air-Land Battle." This chapter emphasized a partnership between the Army and the Air Force. It also required Air Force assets to suppress enemy air defenses jointly through the integration of Army and Air Force intelligence and attack capabilities. This differed from Air Force doctrine at the time. Although Air Force doctrine included these mission sets, it held no specific provisions for close cooperation with the Army for mission execution.³³

Coincidentally in 1976, NATO collaboration on this joint Army-Air Force concept highlighted a command and control problem for the US Army and Air Force. "Based upon the growing requirement...to interdict the Warsaw Pact's second echelon forces, NATO's Central Army Group and Fourth Allied Tactical Air Force established a new dimension in offensive air support, called battlefield air interdiction."³⁴ In 1978, NATO wrote its Allied Tactical Publication on Offensive Air Support, ATP 27(A), and included offensive air support in a doctrinal manual for the first time. In 1979, the US ratified and published this ATP. Problematically, though, there was still no joint US doctrine that included air support.

³² Harold R. Winton, "Partnership and Tension: The Army and Air Force Between Vietnam and Desert Shield," *Parameters Magazine* 26, no. 1 (Spring 1996): 102.

³³ Winton, "Partnership and Tension," 103-104.

³⁴ Romjue, *From Active Defense to AirLand Battle*, 62.

Further, the Army believed that the corps commander would control air support missions on the battlefield. This was anathema to the Air Force who wanted the air component to retain command and control of offensive air assets. Planners from both services collaborated to solve the problem. On April 4, 1980, TAC and TRADOC commanders signed a memorandum, TAC-TRADOC Agreement on Battlefield Air Interdiction, which allowed Army corps commanders to prioritize targets and Air Force component commanders to apportion tactical air assets. On September 22, 1981, Headquarters, US Air Force recognized the agreement and stated that it was legitimately Air Force doctrine.³⁵ AirLand Battle doctrine was officially considered a joint doctrine.

Conclusion

Since the arrival of aircraft at the turn of the 20th Century, US air power doctrine has undergone significant changes. Air enthusiasts immediately recognized the inherent power that came with command of the air. Whoever had command of the air would be able to see the battlefield from a previously unattainable position. The aircraft not only put eyes in the air, but it gave its practitioner the ability reach behind enemy lines and attack from above. The implications of this capability resonated with air power proponents, and the concept of strategic bombing was created. Early air power theorists were convinced that strategic bombing could vastly reduce the significant loss of life that came with huge force-on-force battles. Instead of brute force battles, air power could bring a decisive end to attrition warfare by attacking the enemy at its heart. This single-mindedness of the strategic bombing advocates drove them to seek independence from the other services. Strategic bombing doctrine was tried and touted as a success both in the European and Pacific theaters of war during World War II. The momentum that the air power advocates gained led to the creation of the

³⁵ Romjue, *From Active Defense to AirLand Battle*, 63.

US Air Force as an independent service in 1947. To justify its existence as an independent force, the Air Force incorporated the long-range, strategic delivery of nuclear weapons into its doctrine. Over the course of its history, the Air Force has regularly produced codified doctrine with a heavy focus on strategic use of air power.

Doctrinal development was not without challenges to the Air Force, especially in the joint arena. AirLand Battle posed a problem between two services with different perspectives on doctrinal development. At the height of the Cold War, Army leaders recognized the need for a joint Army and Air Force venture to combat a possible Soviet invasion of Europe. In order to address this doctrinal shortfall, the Army developed AirLand Battle doctrine. There was no real historic precedent for the creation of joint doctrine, so the Army forged the way. Army TRADOC produced doctrine for the entire service, but AirLand Battle required operational and tactical input from the Air Force. This created a tension between the services because they produced doctrine at different command levels. Additionally, the Army included the AirLand Battle doctrine in their 1976 release of FM 100-5, and put the proverbial cart before the horse. It came as a surprise to the Air Force as there had been no joint collaboration on its development. It also gave command and control of air assets to the Army corps commander. This was abhorrent to the young Air Force. It did not want to relinquish command and control of its assets, because doing so would imply that the Air Force existed in a subordinate role to the Army. Finally, nearly five years after the release of FM 100-5, Air Force and Army planners collaborated on a command and control solution that allowed the Air Force component commander to control his assets and prosecute target sets that were prioritized by the corps commander. AirLand Battle became official joint doctrine and its challenges offer lessons on Air Force and Navy joint collaboration for the future. Chapter 3 will examine Navy doctrine as it

developed and changed throughout its history. The primary focus will be on the last 100 years.



Chapter 3

US Navy Doctrine

Naval doctrine is the foundation upon which our tactics, techniques, and procedures are built. It articulates operational concepts that govern the employment of naval forces at all levels. A product of more than 218 years of US Navy and Marine Corps experience in warfighting, it incorporates the lessons of history, learned in both the flush of success and the bitterness of failure.

Naval Doctrine Publication 1

Navy Doctrine

The study of US Naval doctrine presents significant challenges. Throughout its history, the Navy has placed less emphasis on codification of its doctrine under the moniker of “naval doctrine.” Consequently, this makes detailed analysis more difficult. Current US Navy doctrine finds its roots in the writings of Alfred Thayer Mahan (1840-1914). Mahan was born at the US Military Academy, West Point, New York, on 27 September 1840. Not only was his father the dean of the faculty and an instructor of civil and military engineering, but he was also known for his writings on Jomini. Despite his father’s background in the Army, Alfred Thayer Mahan chose to attend the Naval Academy, graduating in 1859. During his career, Mahan witnessed the industrialization of naval and military technologies. Wood vessels were replaced with iron, sailing ships gave way to steam power, and round shot was replaced by shells. Internationally, Britain, a global sea power, changed its global focus to a local focus, thus allowing other nations to

think in global terms. These all greatly influenced Mahan's theories on naval doctrine.¹

Mahan argued that naval power and national power go hand-in-hand. A central component of his theory of naval power is the following: "...it is not the taking of individual ships or convoys, be they few or many, that strikes down the money power of a nation; it is the possession of that overbearing power on the sea which drives the enemy's flag from it, or allows it to appear only as a fugitive; and which, by controlling the great common, closes the highways by which commerce moves to and from the enemy's shores. This overbearing power can only be exercised by great navies."² Mahan believed that a nation's path to greatness relied heavily on its ability to command the sea through naval superiority and maintain maritime commerce and trade routes. This provided a doctrinal point of departure for the US Navy at the turn of the 20th Century, but the Navy still had no official, published doctrine. A few short years later, US Naval leaders saw great potential for a new technology to assist the Navy in its oceangoing endeavors, and this was the aircraft.

The Wright brothers' early successes in aviation interested the Navy and they saw the potential value of aircraft in naval warfare. In 1910, Captain W. I. Chambers, who worked for the Bureau of Equipment in the United States Navy, approached the Wright brothers to see if they would attempt a flight off of a United States Navy ship. The Wright brothers declined the offer, but Captain Chambers was able to entice the Curtiss Company to perform the maneuver. On November 14, 1910, Eugene Ely, a member of the Curtiss Company, flew a Curtiss land-plane from a platform on the bow of the U.S.S. *Birmingham*. After this proof-of-

¹ Alfred Thayer Mahan, *Mahan on Naval Strategy: Selections from the Writings of Rear Admiral Alfred Thayer Mahan*, ed. John B. Hattendorf (Annapolis, MD: Naval Institute Press, 1991), xii-xvii.

² Alfred Thayer Mahan, *The Influence of Sea Power upon History, 1660-1783*, 5th ed. (Boston: Little, Brown, and Co., 1894), p. 26.

concept, Glenn H. Curtiss agreed to instruct naval officers for the creation of a naval aviation program. Lieutenant T.G. Ellyson, United States Navy, was sent to begin training, and on January 18, 1911, he successfully landed on the U.S.S. *Pennsylvania* in the San Francisco harbor. Soon after, he and Curtiss developed a hydroaeroplane attachment for airplanes that enabled them to land on the surface of the water. All these successes led to the first aviation appropriation of \$25,000 in the 1911-1912 Naval Appropriation Act; US naval aviation was born.³

In 1913, the Secretary of the Navy appointed a Board of Aeronautics to report on the requirements of an aeronautical organization for the Navy. A significant recommendation of this board was for the establishment of a naval aviation station at Pensacola, Florida. This was approved in January, 1914, and the first United States Navy air station was opened. In April of that year, naval aviators from Pensacola employed the first naval aviation in active service. Two aircraft were attached to the U.S.S. *Mississippi* and flew in support of operations over Mexican waters during the occupation of Vera Cruz, where they flew scouting missions for combined Navy and Army operations.⁴ The American use of aircraft in support of naval operations was in its infancy as World War I began in Europe.

The growth of naval aviation continued its slow development until the US declared war against Germany on April 6, 1917. Over the next 19 months, the Navy experienced massive growth in its naval aviator community. In April, 1917, the Navy had only 38 naval aviators, but this number exploded to 1,650 naval aviators by November 1918 (Table 1).

³ Captain W. H. Sitz, *A History of U.S. Naval Aviation*, United States Navy Department Bureau of Aeronautics Technical Note No. 18, Series of 1930 (Washington, DC: United States Government Printing Office, 1930), 5.

⁴ Sitz, *A History of U.S. Naval Aviation*, 7-8.

	Apr 6 1917	Nov 11 1918
Officers:		
Naval aviators	38	1,650
Student naval aviators	0	288
Ground	0	891
Student officers (under training for commission)	0	3,881
Total officer personnel	38	6,716
Men:		
Aviation ratings	163	21,951
General ratings assigned to aviation duty	0	8,742
Total enlisted personnel	163	30,693
Total personnel	201	37,409

Table 1: Strength of Naval Aviation Duty Personnel from 1917 to 1918

Source: Captain W. H. Sitz, *A History of U.S. Naval Aviation*, United States Navy Department Bureau of Aeronautics Technical Note No. 18, Series of 1930 (Washington, DC: United States Government Printing Office, 1930), 9.

In “A History of U.S. Naval Aviation” written for the US Navy Bureau of Aeronautics in 1930, United States Marine Corps Captain W. H. Sitz recalls, “For the purposes of war, it immediately became necessary to obtain numerous trained crews composed of pilots, machine gunners, and observers, in order to operate successfully the bombs, machine guns, and radio making up the equipment of aircraft. In addition, a very large force of so-called trained ground personnel was required, and the enrollment and training of the tremendous numbers of officers and men required was in itself a task of stupendous magnitude.”⁵ During the war, these aviators and their aircraft were utilized in France, Italy, Belgium, and the British Isles. Until the armistice was signed, they flew convoy, scout, bombing, and spotting missions. In Ireland, for example, operations from US naval air stations included over 761 hours with 45,683 miles flown. During this time, five oil patches were sighted, three were bombed, and seven submarines were sighted and bombed.⁶ Two of the submarines were so significantly damaged that they had to return to

⁵ Sitz, *A History of U.S. Naval Aviation*, 9.

⁶ An “oil patch” is a broad term that refers to oil fields and their accompanying oil and gas exploration and production.

their bases.⁷ Aviation had truly taken hold in the US Naval organization during World War I.

After the seeing the offensive capabilities and utility of aircraft in World War I, the Navy aggressively sought to further incorporate aviation into its institution. In 1919, a joint Army and Navy board called the Aeronautical Board convened, and in December it released a statement that addressed Army and Navy functions in war. According to Futrell, in *Ideas, Concepts, Doctrine*, the board assigned the following responsibilities to Naval aviation:

Navy aircraft would operate from mobile floating bases or from naval air stations on shore as an arm of the fleet; for overseas scouting; against enemy shore establishments when such operations were conducted in cooperation with other types of naval forces or when their mission was primarily naval; to protect coastal sea communications by reconnaissance and patrol of coastal sea areas, to defend convoy operations; and to attack enemy submarines, aircraft, or surface vessels through the sea area; and alone or in cooperation with other arms of the Navy or with the Army against enemy vessels engaged in attacks on the coast.⁸

The Navy realized that it needed a viable platform from which to launch and recover aircraft – its so-called mobile floating base. In 1920, the Navy began work on a *Proteus*-class collier, the *USS Jupiter*, to convert it to an aircraft carrier, and on March 20, 1922, the *USS Langley* was commissioned and designated CV-1.⁹ This was the beginning of the use of aircraft at sea; it necessitated some additions to the Navy's existing doctrine.

It was during this time that “Billy” Mitchell was at the beginning of his quest to keep all of aviation under a singular service. He challenged

⁷ Sitz, *A History of U.S. Naval Aviation*, 28.

⁸ Futrell, *Ideas, Concepts, Doctrine*, vol. 1, 34.

⁹ US Navy, “A Brief History of U.S. Navy Aircraft Carriers Part I – The Early Years,” http://www.navy.mil/navydata/navy_legacy_hr.asp?id=1 (accessed 16 February 2011).

the Navy with his battleship bombing tests of the *Ostfreisland*. The success of his tests fueled bitter service rivalries between the Army and the Navy which extended to the Air Force. This will be discussed in more detail in chapter 4. In response to Mitchell's 1921 tests, the Navy created a Bureau of Aeronautics to help develop its aviation doctrine. The bureau's first chief was Rear Admiral William A. Moffett, and although he was not an aviator, he was a great proponent of both fixed-wing aviation and of rigid airships.

In a 1925 lecture to the Army War College, Moffett outlined the doctrinal principles that accompanied the addition of naval aviation. He enumerated the functions and missions of naval aircraft in four ways. First, aircraft were to operate as an arm of the fleet and they must be under control of the Navy. The fleet consisted of not only high-seas vessels including battleships, aircraft carriers, cruisers, and destroyers; but it also submarines, fuel ships, transports, convoy, and patrol vessels. Moffet believed Navy aviation operated in conjunction with the fleet and must be commanded by Navy personnel. When the fleet was operating in coastal waterways, naval aircraft were responsible for ensuring the protection of the fleet and the coast. This use of aviation was in direct conflict with the ideas fronted by Mitchell who believed Army aviation should be in charge of coastal defense. Second, aircraft were for overseas scouting. When the fleet operated on the high seas, naval aircraft were under control of the high seas escort commander. They operated as the "eyes of the fleet" and enabled it to see over the horizon. Third, aircraft must be capable of acting against enemy establishments. Finally, the fourth mission of the naval aircraft was to protect coastal sea communication by reconnaissance and patrol of coastal sea areas; by convoy operations; by attacks on enemy submarines, aircraft, or surface

vessels; and in cooperation with the Army against enemy vessels attacking the coast of the US.¹⁰

Further, after clarification of the functions of the aircraft, Moffet stated that the Navy needed the following types of aircraft: fighting airplanes for use on vessels and carriers to obtain local control of the air; bombing airplanes for use on carriers to bomb enemy vessels and bases; torpedo airplanes for use on carriers to torpedo enemy vessels; observation and scouting airplanes for use on battleships, aircraft carriers, and other vessels for scouting and observation of gun fire; patrol airplanes – large seaplanes or flying boats – for use from Naval bases to operate on patrols and perform convoy work; and finally, training planes for both primary training and gunnery training.¹¹ This extensive list formed the beginnings of the Navy's aviation procurement. Aircraft acquisition in turn led to the development of doctrine for its use.

As the US entered World War II, the Navy's aviation doctrine experienced a few changes that differentiated it from that of World War I. Although there were significant technological advances in aircraft and munitions, they were employed in a way similar to that of the previous conflict. For example, defensive scouting by naval aircraft was still a doctrinal tenet. In years past, the Navy used carrier planes and floatplanes to scout ahead of the fleet for the enemy. These aircraft could only scout about two hundred miles before returning to the fleet. Because fleets could close on one another by about five hundred miles per night, aircraft with greater radius of flight were required. During the Pacific half of Rainbow Five,¹² the Navy employed VP aircraft – “V” for

¹⁰ Rear Admiral William A. Moffett, “The Naval Air Service” (lecture, The Army War College, Washington Barracks, D.C., 10 November 1925).

¹¹ Moffett, “The Naval Air Service” lecture.

¹² Prior to World War II, the US had a series of plans to address potential actions with its allies in the war. These were called the Rainbow Plans and they were numbered one through five. Rainbow 1 limited action to prevent a violation of the Monroe Doctrine up to 10 degrees south latitude. Rainbow 2 included Rainbow 1 along with combined US/France/Great Britain actions against the Axis. The US would be responsible for the

heavier than air and “P” for patrol – in squadrons called VProns. These aircraft included flying boats that could scout one thousand miles out to sea. Their original mission was base defense. Their extensive range provided ample warning of patrolling enemy vessels. Though the flying boat was conceived of prior to World War I, technology was not sufficient to allow aircraft to fly at such great ranges.¹³

At the end of 1941, Admiral Husband Kimmel, Chief of the Pacific Fleet, chose to utilize the VProns in a doctrinally different way. His primary mission was to divert the Imperial Japanese Navy from attacking the British naval base at Singapore. To prepare for this, Kimmel placed his VProns in the harbor at Oahu. He planned to ambush Admiral Yamamoto’s Combined Fleet and wanted to use the VP aircraft to scout and bomb ahead of the Pacific Fleet. Rather than accumulating extra hours on the aircraft performing base defense, he chose to keep them in the harbor in preparation for their new mission. The Chief of Naval Operations and Secretary of the Navy approved his battle plan in September, but it was not ready for execution by December. As a result, on December 7, 1941, sixty-eight of sixty-nine VPs were destroyed during the Japanese attack on Pearl Harbor.¹⁴ Though it ended with disastrous consequences, Kimmel’s plan demonstrated an example of the evolution of traditional naval aviation doctrine between WWI and WWII.

The vastness of the sea domain has greatly impacted the development of Navy fleet and aviation doctrine. Historically, naval vessels spent extensive periods of time at sea with little or no direct

Pacific. Rainbow 3 included Rainbow 1 as the first action and it then projected US forces into the Pacific. Rainbow 4 included Rainbow 1 and a strategic defensive was maintained in the Pacific until major naval forces could move to attack Japan. Rainbow 5 kept Rainbow 1 as the first priority. Then US forces would flow into the east Atlantic, Europe, and Africa alongside Great Britain and France. This was modified to include a Pacific defense. GlobalSecurity.org, “War Plan Rainbow,” <http://www.globalsecurity.org/military/ops/war-plan-rainbow.htm>.

¹³ Edward S. Miller, “Eyes of the Fleet: How Flying Boats Transformed War Plan Orange,” in *One Hundred Years of US Navy Air Power*, ed. Douglas V. Smith (Annapolis, MD: Naval Institute Press, 2010), 33, 40-41.

¹⁴ Miller, “Eyes of the Fleet,” 41.

guidance or control from higher levels of command. The commanders of the naval vessels retained the ability to make required decisions with little oversight. Employment guidance from higher levels of command was designed to be just that – guidance. In a 1994 article entitled “Naval Doctrine...From the Sea,” Dr. James J. Tritten details this idea as it was written in a 1943 US Pacific Fleet (PAC-10) doctrinal document: “[Doctrine was] not intended and shall not be construed as depriving any officer exercising tactical command of initiative in issuing special instructions to his command...the ultimate aim is to obtain essential uniformity without unacceptable sacrifice of flexibility.”¹⁵ Further, the PAC-10 guidance acknowledged an inability to provide specific instructions for all situations. It sought to allow commanders to utilize their best judgment in every situation. There could be no single rule to fit every contingency.¹⁶ Naval aviation fit squarely within this paradigm. There was interdependence between carrier aircraft and the vessels from which they flew. Because of their ability to scout and attack, they were simultaneously an offensive and defensive extension of the fleet. Commanders retained the freedom to utilize their assets flexibly as mission requirements dictated. These prevailing beliefs have been foundational to the evolution of navy fleet and aviation doctrine from its beginnings to the present.

During the 50 years following the end of World War II, the Navy has focused less on codification of naval doctrine and concentrated more on the informal passing of doctrinal ideas among its members. This was more like the pre-Mahanian navy. Doctrine was propagated throughout the Navy through the shared experiences of its officers. According to Tritten, “There is a long history of the informal beliefs of the officer corps as U.S. Navy doctrine – which may have even been more powerful than

¹⁵ Dr. James J. Tritten, “Naval Doctrine...From the Sea” (Norfolk, VA: Naval Doctrinal Command, December 1994), 11-12.

¹⁶ Tritten, “Naval Doctrine...From the Sea,” 12.

the official written versions that coexisted. The parallel to unwritten doctrine in international law is law based upon custom and not on treaties. Both are equally valid but treaties are easier to change.”¹⁷ This had become once again the vehicle for dissemination of Navy doctrine.

After the Goldwater-Nichols Act of 1986, the Navy began to more carefully consider its lack of written doctrine. Because Goldwater-Nichols mandated that the military services must collaborate on the development of joint doctrine, the services were forced to examine their own doctrine. The intent of joint doctrine was to provide guidance for integrated employment during joint military operations. Individual service doctrine was needed to fill the gaps where the joint doctrine did not address service-specific areas. Therefore, in 1993, the Navy Department created the US Naval Doctrine Command (NDC) so it could once again produce codified naval doctrine. The NDC quickly organized and in 1994 produced the first comprehensive naval doctrine publication since World War II. It was called Naval Doctrine Publication (NDP) 1, *Naval Warfare*.¹⁸ Following the release of NDP 1, the NDC produced five more doctrine publications in the series: NDP 2, *Naval Intelligence*; NDP 3, *Naval Operations*; NDP 4, *Naval Logistics*; NDP 5, *Naval Planning*; and NDP 6, *Naval Command and Control*. Each of these resembled the other services’ doctrinal publications and was designed to complement the US military joint publications.

After the release of the NDP series of publications, the Navy produced a number of less formal doctrinal publications. Some of these include: “Forward...From the Sea” in 1994; “Sea Power 21” in 2002; “Naval Transformation Roadmap: Power and Access from the Sea” in 2004; and Naval Operations Concept 2010 (NOC 10), *Implementing the Maritime Strategy*, in 2010. These range from pamphlet-style

¹⁷ Tritten, “Naval Doctrine...From the Sea,” 3.

¹⁸ Tritten, “Naval Doctrine...From the Sea,” 4.

publications to more traditional doctrinal publications to magazine articles written by the Chief of Naval Operations (CNO). This eclectic assortment of documents makes the search for current US Naval doctrine confusing at best. None of these is specifically identified as doctrine, although all fit the Navy's definition of doctrine that is found in NDP 1: "Doctrine is the starting point from which we develop solutions and options to address the specific warfighting demands and challenges we face in conducting operations other than war. Doctrine is conceptual – a shared way of thinking that is not directive. To be useful, doctrine must be uniformly known and understood. With doctrine we gain standardization, without relinquishing freedom of judgment and the commander's need to exercise initiative in battle."¹⁹ NOC 10 even separates and distinguishes itself from tactics and doctrine as a "*precursor to the development of both*."²⁰ NOC 10 also outlines the areas where the Navy and naval forces – including the Marines and Coast Guard – operate. "The Naval Service operates in the *maritime domain*, which consists of the 'oceans, seas, bays, estuaries, islands, coastal areas, and the airspace above these, including the littorals.'"²¹ It conceives of the Navy as the bridge between the land and the water. This could give the impression that the Navy is the force to control the seams between air, sea, and land that are characteristic of the littorals. NOC 10 poses a potential barrier to effective joint planning of the defense of maritime regions. The Navy's diverse collection of doctrine documents, along with its oral and experiential tradition of disseminating doctrine, puts them on an uneven footing with the Air Force as they develop AirSea Battle doctrine.

¹⁹ Naval Doctrine Publication (NDP) 1, *Naval Warfare*, 28 March 1994, ii.

²⁰ Naval Operations Concept 2010 (NOC 10), *Implementing the Maritime Strategy*, 2010, 2 (emphasis in original).

²¹ NOC 10, 8.

Conclusion

Throughout its history, the preponderance of Navy doctrine has been distributed through the spoken word based on individual experiences. In Tritten's words, "Navy doctrine is the art of the admiral."²² Periodically during the 20th Century, however, the Navy took time to codify its doctrine. This codification of doctrine took on many different appearances. It ranged from the very informal production of pamphlets to written guidance in military journals. A shortfall of the Navy's published doctrine throughout its history is that it has been very tactically focused and it has not specifically addressed maritime trade. Milan Vego, a professor of Joint Military Operations at the US Naval War College asserts, "All the U.S. Navy's publications are focused primarily on protection of commercial and military shipping. There is not a single document currently in use by the U.S. Navy that explains the employment of combat forces in defense and protection of maritime trade."²³ In addition to these doctrinal issues, the Navy's concept of air power in the context of the fleet has been vastly different from the Air Force's strategic and tactical perspective. Navy aircraft were primarily used for scouting and for offensive and defensive attack in order to protect the integrity of the fleet. The Navy's eclectic assortment of doctrine and very different view of the role of air assets will significantly challenge its joint AirSea Battle doctrine venture with the Air Force. Chapter 4 will provide some historical examples of US Air Force/Navy inter-service rivalry and cooperation that will help pave the road for collaborative efforts in the future.

²² Tritten, "Naval Doctrine...From the Sea," 14.

²³ Dr. Milan Vego, "The U.S. Navy's Capabilities and Limitations," The United States Naval War College, Joint Military Operations Department (September 2010), IV-47.

Chapter 4

History: Inter-service Rivalry and Cooperation

These airmen, from different services and with different capabilities but bound together by mutual respect, can act as their country's shield. The sacrifices and experiences of their predecessors will teach them that unity grows stronger as one moves closer to the sound of guns, and that in the future the country cannot afford to wait for that sound to achieve unity.

James A. Winnefeld and Dana J. Johnson

Introduction

The invention of the aircraft and its accompanying advantages in the prosecution of warfare were new and exciting propositions for the military services in the early 1900s. This excitement, coupled with the vastly different directions in doctrinal development and the application of air power taken by the Navy and the Air Force over the course of the 20th Century, has fed an intense service rivalry between them. This chapter will present a series of historic vignettes that will highlight both tensions and cohesion between the Navy and the Air Force. It will first focus on inter-service rivalry and differences the services faced regarding one another. Then it will transition to the positive interactions between the services. Areas of concern that arise time and again include command and control challenges, communication issues, and planning problems. Not every example is pulled from the annals of warfare. Some were experienced during joint warfighting operations and others resulted from political interactions between the services. A brief look at the bad and the good will help the services realize their past mistakes and build on their successes. Without constant reflection on the past, the services

may likely repeat it. This reflective analysis will provide a cautionary foundation upon which AirSea Battle creators may build a better joint doctrine.

Inter-service Rivalry/Challenges

Many examples of inter-service rivalry and challenges to joint operations exist between the Air Force and the Navy. There are a few that offer a glimpse into important issues that are extremely relevant to the development of AirSea Battle doctrine. The first two vignettes – the bombing of the *Ostfriesland* and the “Revolt of the Admirals” – demonstrate challenges that occurred at political levels of government. These led to a significant resentment between the services which still lingers today. The Korean War and Operation Rolling Thunder examples demonstrate command and control challenges the services faced that were laced with intense inter-service rivalry. Finally, a brief illustration from Desert Storm shows the challenges faced when a service is unprepared to interact in a truly joint environment. Together, these explicate the importance of service politics, command and control, and “jointness.” These enduring lessons are particularly applicable to the joint Air Force/Navy development of AirSea Battle doctrine.

Bombing of the *Ostfriesland*

Immediately following World War I, Brigadier General Billy Mitchell, the Army Air Service’s most vocal proponent, sought the creation of an independent air service. He believed that the Army Air Service should have control of all land-based air assets and the Navy should control all fleet-based air assets. It was his contention that land-based air forces could control the surface of the sea and the airspace above it within the operating radius of the aircraft. This obviated the need for the Navy to perform coastal defense. With this capability of air forces, he believed that the Navy was relegated to duties outside the

operational radius of the aircraft.¹ As a corollary to Mitchell's plan for an independent air service, he realized the need for funding to develop and purchase aircraft. If aviation could usurp the role of coastal defense from the Navy, it would eliminate the need for so many coastal Naval bases and vessels. These funds could then be used by the Army Air Service to procure more aircraft. Mitchell believed this would be more cost effective in the long run. He challenged the Navy to allow him to perform a live bombing test to prove the capabilities and lethality of aerial bombardment.

Intrigued by Mitchell's claims, Congress encouraged the Navy to stage aerial bombing tests. Because they felt that capital ships were not vulnerable to aerial bombardment, the Navy agreed. In 1921, the Navy allowed moored captured German warships off the Atlantic coast for the experiment. Mitchell and the members of the 1st Provisional Air Brigade practiced aerial bombing for several weeks during the lead up to the sinking of the *Ostfriesland* on July 21, 1921.² After multiple passes, the aerial bombardment was successful and the ship was sunk. Mitchell recounts the event in the following way: "In a minute the *Ostfriesland* was on her side; in two minutes she was sliding down by the stern and turning over at the same time; in three minutes she was bottom-side up, looking like a gigantic whale, the water oozing out of her seams as she prepared to go down to the bottom, the gradually she went down stern first. In a minute more only the tip of her beak showed above the water. It looked as if her stern had touched the bottom of the sea as she stood there straight up in a hundred fathoms of water to bid a last farewell to

¹ William "Billy" Mitchell, *Winged Defense: The Development and Possibilities of Modern Air Power – Economic and Military* (Tuscaloosa, AL: The University of Alabama Press, 2009), 215.

² Robert Frank Futrell, *Ideas, Concepts, Doctrine*, vol. 1, *Basic Thinking in the United States Air Force 1907-1960*, 1989, third printing (Maxwell Air Force Base, AL: Air University Press, September 2001), 37.

all her sister battleships around her.”³ His air brigade and their 2,000 pound bombs were a success. This dramatic event revealed a significant vulnerability of the Navy. Because of the interest in the bombings by the American public, its success elevated Mitchell in the public eye. This blight on the Navy and victory of airpower’s aerial bombardment became the genesis of the rift between the Air Force and the Navy.

Revolt of the Admirals

Tensions between the Navy and Army Air Forces continued all the way through World War II and culminated with what has become known as the “Revolt of the Admirals.” After the war, Navy leaders were convinced of the criticality of carrier aviation to the offense and defense of the Fleet. “[F]rom the middle of the Pacific war onward, this carrier air power had been increasingly directed against enemy land targets – airfields, naval bases, ports, refineries – rather than primarily against enemy naval forces at sea.”⁴ This added a new dimension to naval operations. Further, the Navy saw that nuclear technology was garnering a significant portion of the nation’s defense spending. To capitalize on this spending, Navy leaders were aggressively pursuing the procurement of a flush-deck super carrier – the *United States* – that could operate long-range attack aircraft capable of carrying nuclear weapons to a radius of approximately 1700 nautical miles. Unfortunately, the newly independent Air Force had other plans for the defense spending.

Post-war Army Air Forces leaders were convinced that their strategic bombing doctrine contributed significantly to the victories against Germany and Japan. They continued their aggressive fight to achieve service independence and with the passage of the National Security Act of 1947, they were successful. With the successful

³ Mitchell, *Winged Defense*, 72.

⁴ Jeffrey G. Barlow, *Revolt of the Admirals: The Fight for Naval Aviation 1945-1950* (Washington, DC: Ross & Perry, Inc., 2001), 292.

establishment of the US Air Force, leaders of the fledgling air service continued to seek ways to justify their independence. They also recognized the significance of nuclear technology for the defense of the United States, and they sought improved long-range bomber aircraft. “[T]he Air Force’s near-term expectations for accomplishing its primary wartime offensive mission had become inextricably linked with the enormous B-36 bomber. This aircraft was thought capable of carrying out round-trip atomic bombing strikes of urban-industrial targets in the Soviet heartland from bases in the continental United States.”⁵ During this time, on March 28, 1949, Secretary of Defense James Forrestal left office. Louis Johnson, a prior proponent of the Army Air Forces, took Forrestal’s vacant seat. Together, these elements laid the foundation for the Revolt of the Admirals.

Shortly after taking office, Johnson halted the construction of the *United States*. This was a greater blow to the Navy because it occurred when Secretary of the Navy John Sullivan was out of town. As this was done without his knowledge, Sullivan resigned his position. In his place, Johnson appointed Francis P. Matthews. Because Matthews had no prior military or government experience, he fully supported the Secretary of Defense. The cancellation of the flush-deck super carrier program freed up funding for the Air Force’s growing B-36 program. A few weeks later, Congress received an anonymous document that alleged the Air Force took inappropriate actions when it procured the B-36. Although the accusations were later found to be made by the special assistant to the Under Secretary of the Navy and they were untrue, they spawned congressional hearings on the subject. Naval leaders accused the Secretary of Defense of focusing too heavily on strategic bombing and neglecting critical naval programs. This scene became the “admirals’ revolt.” In the wake of these hearings, several senior Navy leaders were

⁵ Barlow, *Revolt of the Admirals*, 293.

punished for not following the policies of the Secretary of Defense. Further, the Navy suffered budget cuts in its aviation assets.⁶ All this together was seen as a significant loss for the Navy and it widened the rift between the Navy and the Air Force.

This is especially relevant when considering the development of a joint Air Force and Navy doctrine. The tension between these services is long-standing with very deep roots. Coupled with the problems in the wake of the sinking of the *Ostfriesland* by Billy Mitchell, the “Revolt of the Admirals” incident filled the gap between the Air Force and Navy with mistrust and suspicion. The actions of each service was seen by the other as self-serving and not in the interests of the nation. AirSea Battle doctrinal collaboration must understand this divide and consciously work towards bridging this gap. Rivalries have been present not only during periods of relative peace, but also during times of conflict. Excerpts from the Korean War, the Vietnam War, and Operation Desert Storm offer illustrations in times of conflict.

The Korean War

The Korean War offers a variety of examples of inter-service rivalry and operational challenges that facing the Navy and the Air Force. This vignette will focus on command and control issues. After war broke out on the Korean peninsula on June 25, 1950, it was necessary to develop clear command relationships for control of joint air operations. The US commander in the Far East (CINCFE) at this time was General of the Army Douglas MacArthur. In addition to his role as CINCFE, he also served as the Supreme Commander Allied Powers in Japan (SCAP). Under his CINCFE command, he had the following component commands: Far East Air Forces (FEAF), Naval Forces Far East (NavFE), and Army Forces Far East (AFFE). Lieutenant General George Stratemeyer, the FEAF commander, was CINCFE’s air component

⁶ Barlow, *Revolt of the Admirals*, 1-2.

commander, and Vice Admiral Turner Joy was the commander of NavFE.⁷

Until July 3, 1950, when the Navy started air operations, the Air Force controlled air operations in Korea. The newly joint operating environment necessitated critical coordination. General Stratemeyer sought operational control of all naval aviation – carrier-based and land-based – that flew in the Korean theater of war. Admiral Joy, on the other hand, wanted to retain control of Navy air assets and desired a specific geographic region in Korea to be assigned to the Navy for attack missions. A compromise was struck and *coordination control* was created. According to the idea, when both Navy and Far East Air Forces were assigned to a mission, coordination control lay with the Commanding General, Far East Air Forces. This concept was unclear at its inception, and it was never clarified. As a result, the Navy liberally interpreted it and they accepted only those missions that they felt were aligned with their responsibilities.⁸ In *A History of Air Warfare*, Alan Stephens' discussion of the Korean War includes the following assessment: "Throughout the war, Navy strike, reconnaissance, and air defense aircraft flying from carriers off the Korean coast were routinely tasked separately or were allocated for the sole use of specific units...[T]his disorderly arrangement prevented 'the full force of air power' from being brought to bear against the enemy."⁹

To help rectify this command and control problem, a joint operations center (JOC) was formed in Korea in July, 1950. The JOC had significant issues as soon as it began operating. It was plagued with poor communication and lacked a joint doctrine for control of air operations. These can be specifically seen in the close air support (CAS)

⁷ James A., Winnefeld and Dana J. Johnson, *Joint Air Operations: Pursuit of Unity in Command and Control, 1942-1991* (Annapolis, MD: Naval Institute Press, 1993), 41.

⁸ Winnefeld and Johnson, *Joint Air Operations*, 42-43.

⁹ Alan Stephens, "The Air War in Korea, 1950-1953," in *A History of Air Warfare*, ed. John Andreas Olsen (Dulles, VA: Potomac Books, Inc., 2010), 104.

feedback reports submitted by the commander of Carrier Air Group 5 (CVG 5) to the Task Force commander on October 30, 1950. The report includes the following information: "Communications were chiefly responsible for lack of effectiveness. All aircraft were required to report in to the JOC...The radio equipment provided the JOC was always so restricted in range that Naval Aircraft invariably had to fly within a mile or two of the station to achieve satisfactory reception."¹⁰ Further, the report detailed problems with radio compatibility and with different types of charts between the Navy and the Air Force.¹¹ Even though these issues with radios and charts were tactical, they directly affected the ability to command and control air assets.

These were only a few of the joint challenges the services faced in the Korean War. Each service had a totally different concept of CAS that emanated from its doctrinal position on the proper use of air power. Ultimately, the Air Force and the Navy adapted their operations and worked jointly to support the ground forces. For example, in August and September 1950, the Air Force and Navy worked in coordination with the ground forces to successfully defend the Pusan pocket. Air Force aircraft adapted their position on CAS and supported the ground forces more effectively. The Navy allowed itself to be coordinated by the Fifth Air Force. The services also overcame their aversion to coordinated action in August 1950 during their attacks on the Seoul bridges. Air Force Bomber Command and Navy Task Force 77 air assets performed very successful coordinated attacks on the bridges. The attacks were so closely coordinated and executed that post mission battle damage assessments were unable to discern which service had actually destroyed the bridges.¹² Although the services struggled immensely to work

¹⁰ Report of Commander Carrier Air Group (CVG) 5, "Close Air Support in Korean Theater," 30 October 1950, 1.

¹¹ Report of Commander CVG 5, 1-3.

¹² Winnefeld and Johnson, *Joint Air Operations*, 56.

together in the Korean War, they were able to overcome some of their tensions and operate jointly. AirSea Battle doctrinal developers must heed these lessons learned and jointly create doctrine with clear lines of command, control, and communication. They must seek the synergistic use of Navy and Air Force air power. These are lessons critical to joint operations.

Rolling Thunder

During the Vietnam War, command and control problems plagued the smooth joint execution of Operation Rolling Thunder. Neither service was willing to allow the other to control its resources during the conflict, so there could be no single commander for all the aviation assets. Instead, Pacific Command (PACOM) allowed the Commander of Pacific Fleet (PACFLT) and the Commander of Pacific Air Forces (PACAF) to direct their own aviation forces. The Air Force's 2d Air Division in Saigon received guidance from PACOM, PACAF, and from the 13th Air Force in the Philippines. Further, the Navy's Carrier Task Force (CTF) 77 in the Tonkin Gulf received its guidance from both PACOM and PACFLT. In 1966, to help limit the confusion, PACAF redesignated the 2d Air Division as the 7th Air Force. Despite this attempt at clarifying the command lines, it made things worse as PACAF gave operational direction of its fighter wings to the 7th Air Force and administrative control to the 13th Air Force. What made matters even more convoluted was the method of providing targets to the air assets in theater. PACOM sent its recommended targets back to Washington for review. Chairman of the Joint Chiefs, Army General Earle G. Wheeler, had his "Rolling Thunder Team" of officers review the target recommendations and forwarded them to Secretary of Defense Robert S. McNamara for approval. These constraints significantly limited the air campaign.¹³

¹³ Mark Clodfelter, *The Limits of Air Power: The American Bombing of North Vietnam* (1989. Reprint, Lincoln: University of Nebraska Press, 2006), 128-129.

Inter-service rivalry also complicated the execution of Rolling Thunder. Sortie totals became a competition of sorts. According to Clodfelter in *The Limits of Air Power*, “Navy air units vied with Air Force squadrons for higher sortie totals against the North.”¹⁴ The commander of the 2d Air Division of the Pacific Air Forces was designated as the “coordinating authority” for Operation Rolling Thunder. He worked with the Navy’s Task Force 77 to partition the country into route packages. These were seven distinct geographical areas with three belonging to the Air Force and four to the Navy. This allowed the services to deconflict and completely segregate their mission execution, but it also prevented them from synchronizing their efforts. Although it allowed both services to function in parallel without direct conflict, this isolation of one service from the other prevented each from obtaining the benefits of the other’s experiences.¹⁵ All of this culminated from problems emanating from inter-service rivalries.

AirSea Battle doctrine could greatly benefit from the lessons gleaned from Operation Rolling Thunder. The ad hoc coordination between the services and the excessive constraints placed upon them by leaders in Washington severely limited their ability to effectively attack the enemy. Further, inter-service suspicion and mistrust did not allow for a single air commander. To achieve maximum effectiveness and efficiency, the naval and air component must not segregate their operations. They must work under a common air component commander to synergize their actions. Moreover, they must acknowledge the fact that working for a single commander does not subordinate one service to another. This service subordination problem was largely

¹⁴ Clodfelter, *The Limits of Air Power*, 129.

¹⁵ Michael W. Kometer, *Command in Air War: Centralized Versus Decentralized Control of Combat Airpower*, (Maxwell Air Force Base, AL: Air University Press, June 2007), 35-36.

mitigated in Operation Desert Storm, but other joint operational challenges arose.

Operation Desert Storm

Operation Desert Storm has often been hailed as a triumph of joint operations, but this brief vignette offers a significant lesson to be learned. Before the end of the Cold War, the Navy Fleet and aviation was postured to defend itself against a Soviet air and submarine attack. It was also designed to prosecute attacks against critical Soviet military targets. It had no doctrine for executing strategic air operations in a low-risk naval environment. The concept of joint operations in warfare was somewhat foreign in the Navy's existing maritime strategy.¹⁶ The lack of joint-mindedness and the doctrinal shortfalls hindered the Navy's smooth integration into the joint warfighting environment at the opening of Desert Storm.

These problems became readily apparent as the Navy tried to plug in to the Joint Forces Air Component Commander (JFACC) and his staff. First, the JFACC staff used a system to enable it to view and manipulate data from the Air Tasking Order (ATO). This system was called the computer-assisted force management system (CAFMS), and it gave its users better battlefield situational awareness of the aviation assets assigned to the daily ATO. The Navy lacked the technology to interface with CAFMS and did not quickly fill positions on the JFACC's air staff to remedy the situation.¹⁷ Navy leaders acknowledged their problems, and Winnefeld and Johnson quote a senior Naval officer as saying, "Desert Storm put a stake through the heart of the Navy's resistance to joint planning and operations."¹⁸ Although it was not directly characterized by an inter-service rivalry, the Navy's challenges in working in a joint

¹⁶ Winnefeld and Johnson, *Joint Air Operations*, 134.

¹⁷ Winnefeld and Johnson, *Joint Air Operations*, 110 and 134.

¹⁸ Winnefeld and Johnson, *Joint Air Operations*, 134.

environment offer a lesson to carry forward into the AirSea Battle doctrinal development.

Joint doctrine must clearly identify the operational command structures to prevent confusion among the services. It is not merely enough, though, for the services to be willing to work with one another. Joint doctrine must also account for differences in technology and terminology. The upcoming AirSea Battle doctrine should build on existing joint doctrinal precepts and present a service-common vernacular. It ought to also account for the inherent technological differences between the Air Force and the Navy. In doing so, it must seek to mitigate these differences to facilitate effective AirSea Battle execution.

Inter-service Cooperation

Like inter-service rivalries and joint challenges, there are many examples of inter-service cooperation and “jointness” between the Navy and Air Force over the last century. World War II is replete with examples of successful joint operations. Specifically, this section will cover the Doolittle Raid on Tokyo, the Battle of Midway, and the World War II Battle of the Atlantic. Additionally, this section will briefly cover Operation El Dorado Canyon to highlight its significant elements of service cooperation. Each of these operations was characterized by a harmonized effort between the Air Force and the Navy. These lessons are also applicable to the AirSea Battle doctrine.

Doolittle Raid

After the Japanese attack on Pearl Harbor, US morale was devastated. President Franklin D. Roosevelt challenged military leaders to develop a plan to attack at the heart of Japan as quickly as possible. The vastness of the Pacific Ocean required the Army Air Forces and the Navy to devise a joint plan. Captain Francis S. Low, US Navy submariner from World War I, remembered seeing Army Air Corps bombers practicing attacks on a chalk outline of a carrier deck in Norfolk, Virginia, and he conceived of the “First Special Aviation Project.”

His plan entailed launching bombers from a Navy aircraft carrier to attack the Japanese mainland. He detailed his plan to the commander-in-chief, US Pacific Fleet, Admiral Ernest J. King, and to Admiral King's aviation authority, Captain Donald B. "Wu" Duncan. Despite Captain Duncan's warning that once bombers launched from the carrier, they could not return to the ship, Admiral King liked the idea and he passed it to the chief of the Army Air Forces, General Henry H. "Hap" Arnold. General Arnold immediately agreed to support the plan and he assigned Lieutenant Colonel James H. Doolittle to work alongside Captain Duncan. Sixteen B-25 medium bombers were modified to be able to takeoff from the deck of a Navy aircraft carrier. Once inter-service carrier procedural training was complete and the concept was proven, the aircraft were loaded on the *U.S.S. Hornet* for transport to within striking distance of Japan.¹⁹

On April 18, 1942, the B-25s launched and proceeded to their targets on mainland Japan. Doolittle's Raiders struck targets in Tokyo, Yokohama, Kobe, Nagoya, and Osaka without incident. Because they could not return to the carrier, they flew on towards China. One aircraft diverted to the Soviet Union and the remaining 15 crash landed in Chinese territory. The raids caused little significant damage to Japan, but they scored a tremendous victory for the American people.²⁰

Although this attack is noteworthy, a more relevant lesson from the Doolittle Raid is found in the successful joint planning and collaborative effort between the Army Air Forces and the Navy. AirSea Battle doctrine can take planning and rehearsal lessons from the Doolittle Raid. The services worked closely to plan, rehearse, and execute a successful joint mission that lifted US morale at a very critical time in its history. The American people needed to know that the US could respond to the

¹⁹ Barrett Tillman, "Into the Rising Sun: The Doolittle Raid" (*Proceedings Magazine*, vol. 133, no. 4, April 2007), 1-3.

²⁰ Tillman, "Into the Rising Sun: The Doolittle Raid," 2-3.

Japanese threat, and the careful joint collaboration between the Air Force and the Navy demonstrated US capability and resolve.

Battle of Midway

The Doolittle Raid underscored the vulnerability of Japan to American air and sea power. In response, the Japanese sought to expand the perimeter of their influence in the Pacific. They set their sights on the Atlantic. They hoped to surprise the American contingent at Midway and overwhelm them with a decisive air attack. Fortunately, the Americans were able to exploit intelligence reports about the Japanese plan for Midway. This enabled the US forces to surprise the Japanese forces and preempt the Japanese surprise attack.²¹ The US air forces in the Battle of Midway were separated into two groups – a sea-based group and a land-based group. The sea-based Carrier Striking Force, comprised of the *Yorktown* group and the *Enterprise-Hornet* group, was commanded by Rear Admiral Frank Jack Fletcher. The land-based air forces of the Naval Air Station at Midway were under the command of US Naval Captain Cyril Simard. These land-based air forces included Naval patrol planes and torpedo bombers, Marine fighters and dive bombers, and Army Air Forces B-17s and B-26s. Communication between the land-based and sea-based US assets was virtually nonexistent during the campaign on 3-4 June so a coordinated attack effort was not possible.²² Despite its uncoordinated nature, the US joint team had the right complement of forces to defeat the Japanese attackers.

The Battle of Midway offers an important example of a successful joint air and naval campaign because it was the first such joint campaign by the Navy, Army Air Corps, and the Marine Corps. In the face of

²¹ Richard W. Bates, *The Battle of Midway Including the Aleutian Phase, June 3 to June 14, 1942* (Report on Strategic and Tactical Analysis. Newport, RI: U.S. Naval War College, 1948), 213.

²² Winnefeld and Johnson, *Joint Air Operations*, 14.

communication challenges between the sea-based and land-based air assets, US forces prevailed against the Japanese. “Midway was a triumph of strategic command and control (getting the forces to the right place at the right time with the right orders) and a failure at the operational and tactical levels of joint air operations (coordinating the efforts of the forces once they are in place).”²³ The proper coordination of joint assets is perhaps the most significant lesson to learn from the Battle of Midway. In his tactical analysis of the battle, Richard Bates acknowledges this and expands on it: “Every effort should be made to obtain the maximum destruction by the application of the necessary power through the proper coordination of all weapons. Attacking air groups should be coordinated so that the maximum effective blow may be delivered against the enemy.”²⁴

Midway provides an example whereby land-based air power was utilized in conjunction with sea-based air power to great effect. Although they did not achieve as many results as the carrier-based aviation, the land-based aircraft succeeded in harassing the Japanese forces and posed a threat simply with their presence. This does not typify a joint operation. With better communication and coordination, however, the land-based and sea-based forces could have better executed the Battle of Midway. AirSea Battle doctrine can also incorporate these lessons. The negative lesson from Midway is found in the ad hoc coordination and virtual lack of communication between the land-based and sea-based forces. A joint force must always seek to transcend the limits imposed by poor unity of command and communication by developing a common frame of reference for mission execution. This transcendence creates synergy. AirSea Battle must be characterized by clear communication channels and a well-defined command hierarchy. The synergistic

²³ Winnefeld and Johnson, *Joint Air Operations*, 13.

²⁴ Bates, *The Battle of Midway Including the Aleutian Phase*, 221-222.

application of joint power must be a centerpoint of the AirSea Battle doctrine.

Battle of the Atlantic

In January, 1943, there were more than 100 German U-boats – in “Wolf Packs” - in the Atlantic Ocean patrolling the “air gap” between the southern tip of Greenland and the range of patrol aircraft from the East Coast of the US. Before they were able to use ULTRA to decrypt German communications about the locations of their submarines, the Allies needed to develop a coordinate air and sea battle plan to get their convoys from North America to Europe. “Ultimately, the recipe for defending a convoy against a Wolf Pack, and for sinking U-boats in the process, was worked out by the British in November and December 1941 west of Gibraltar, in the so-called Azores air gap. There, they combined modern 10-cm radar; large, well-trained and well-lead escort groups, and carrier-based and very long range (VLR) airpower to exact a toll on German submarines.”²⁵ British, Canadian, and American Allied planners developed a joint campaign to use B-24 Liberator aircraft as escorts for their Atlantic convoys. Not only could the B-24s act as spotters for the convoys, but they could also attack the U-boats from the air. In May, 1943, the Germans lost 47 U-boats to Allied air attacks in the North Atlantic.²⁶ The Allied success allowed them to build up a significant European invasion force which they used to ultimately defeat Germany and gain victory in Europe.

The Battle of the Atlantic was not entirely a success story. Allied air and naval forces had to overcome a significant inter-service rivalry challenge. “The Navy (and Coastal Command) made defeating the U-boat

²⁵ Marc Milner, “The Battle that had to be Won,” *Naval History* 22, no. 3 (June 2008). <http://www.usni.org/magazines/navalhistory/2008-06/battle-had-be-won> (accessed 5 April 2011), 6.

²⁶ Jose Carreno, Thomas Culora, Captain George Galdorisi, and Thomas Hone, “What’s New about the AirSea Battle Concept?” *Proceedings Magazine* 136, no. 8/1,290 (August 2010), 2.

its top priority; the Air Staff continued to see strategic bombing as being of greater importance than trade protection.”²⁷ Because the B-24 was the best suited aircraft for the VLR missions, Coastal Command aggressively sought to acquire them. Bomber Command, on the other hand, believed strategic bombing could win the war. The strategic bombing proponents fought Coastal Command for the B-24s. Heated debates about mission priorities ensued. Additionally, during the lend-lease program in March 1942, the US sent B-17s to Great Britain to support the war effort. The British use of the B-17 became a source of unease for American strategic bombing advocates. Coastal Command created a B-17 squadron that utilized its aircraft for missions other than high-level strategic bombing. Ultimately, the British creation of the Anti U-Boat Warfare Committee helped to allay fears and solve the problem. The committee evaluated the aircraft supply problem and issued a report that favored the Admiralty and Coastal Command. The competition for VLR-capable aircraft between Bomber Command and Coastal Command waned slightly and more aircraft were allocated to support Atlantic convoys. The “attacks bedeviled the Allies all through the winter of 1940-41, but solutions were soon obvious. Among the most important were the development of radar for both aircraft and small vessels, especially the new 10-cm sets that could detect U-boats on the surface, and shipborne high-frequency direction-finding (HF/DF, or Huff/Duff) receivers.”²⁸ These technological advances, along with the Allied joint air and naval operations, led to the success of the Battle of the Atlantic.

This type of joint air and naval operation was a precursor to the current AirSea Battle concept. The Germans were employing an anti-access, area-denial (A2/AD) strategy to prevent the Allied forces from transiting the Atlantic. Allied forces effectively countered the German

²⁷ Duncan Redford, “Inter- and Intra-Service Rivalries in the Battle of the Atlantic,” *The Journal of Strategic Studies* 32, no. 6 (December 2009), 912.

²⁸ Milner, “The Battle that had to be Won.” 4.

A2/AD operation and they expanded their operation to include “bombing U-boat bases on the French coast, ambushing U-boats transiting the Bay of Biscay from the air, targeting the yards where they were built, and reinforcing surface convoy escorts with land-based blimps and seaplanes.”²⁹ Even though there was fierce competition about the proper utilization of air power, US air and naval forces demonstrated a willingness to look beyond existing service tensions for the greater good of the Allied powers. This close coordination between US and Allied naval and air assets for successful A2/AD provides a very basic proof-of-concept for the new AirSea Battle doctrine.

El Dorado Canyon

During the 1980’s, the Libyan government of Muammar al-Qaddafi had a hand in terrorist attacks around the world. In December 1985, terrorist attacks on airports in Rome and Vienna finally precipitated the planning of Operation El Dorado Canyon. The commander of Sixth Fleet and the commander-in-chief of US air forces in Europe (CINCUSAFE), under the direction of the commander-in-chief of US forces in Europe (USCINCEUR), began to develop Libyan attack plans. During this time, Berlin’s La Belle Disco was bombed by Libyan-sponsored terrorists and two US soldiers were killed. Planning suddenly became more focused. USCINCEUR gave targets in Tripoli to Air Force air assets and targets in Benghazi to Navy air assets.³⁰ The plan included a synchronized attack with Air Force aircraft departing from England and Navy aircraft from carriers in the Mediterranean. This posed a significant challenge to joint planners.

In an effort to deconflict these parallel strike packages, Air Force and Navy planners closely coordinated with one another. “Officers in both services quickly realized that their technical vocabulary and tactical jargon were different and that extensive coordination was necessary to

²⁹ Carreno et al., “What’s New about the AirSea Battle Concept?” 2.

³⁰ Winnefeld and Johnson, *Joint Air Operations*, 84.

avoid interference between Air Force and Navy attack planes and support aircraft.”³¹ In *Joint Air Operations*, Winnefeld and Johnson outline the three different forms of coordination:

1. The formal path up the service’s chain of command in Europe to USCINCEUR in Stuttgart and then down the other service’s chain of command.
2. The exchange of liaison officers between the Navy and the Air Force. Navy officers were present at Lakenheath, and Air Force officers were aboard the U.S.S. *America* and the U.S.S. *Coral Sea*.
3. The extensive utilization of secure voice circuits by the various headquarters and flagships to clear up misunderstandings and to gain agreement on important force employment details.³²

These elements of coordination among the services helped them synchronize their efforts during mission execution. Although the attack plans were parallel, they both required support from suppression of enemy air defense (SEAD) assets of both the Air Force and the Navy.³³ The timing of the SEAD needed to be perfect so that Libyan air defense assets would be at the greatest disadvantage. Planners also orchestrated the SEAD efforts for maximum efficiency.

Operation El Dorado Canyon was executed to near perfection on April 14-15, 1986. Though the plan lacked definitive unity of command, the planners performed their duties in sufficient detail to obviate the need for a single air commander. This may be an aberration. If things had changed significantly, the absence of unity of command could have led to disastrous effects. This, however, was not the case. In *El Dorado Canyon*, Joseph Stanik sums up the inter-service joint endeavor in the

³¹ Joseph T. Stanik, *El Dorado Canyon: Reagan’s Undeclared War with Qaddafi* (Annapolis, MD: Naval Institute Press, 2003), 170-171.

³² Winnefeld and Johnson, *Joint Air Operations*, 86-87.

³³ Stanik, *El Dorado Canyon*, 167.

following way: “[T]he US Navy and US Air Force planned and trained for operations against Libya with exceptional skill and precision – often facing short deadlines and working under intense political pressure – and carried them out with extraordinary heroism.”³⁴ Adequate planning time and a willingness to work together helped the joint force achieve success in El Dorado Canyon. It is always easier to develop a plan of action beforehand than try to produce something cohesive on short-notice. Very often the integrity of joint operations is challenged by inadequate timelines. Further, the tyranny of distance also challenges the joint operation. Service planners must work closely with one another on a regular basis to identify shortfalls in planning and alleviate communication problems. El Dorado Canyon brought planners together beforehand to mitigate these problems. The lessons learned about the criticality of joint planning and about the importance of unity of command are vital components to apply to AirSea Battle doctrine.

Conclusion

AirSea Battle doctrinal development can benefit from the lessons learned during joint collaboration in the past. Not all lessons, however, are good. Joint air operations over the last century provide many examples of both tensions and cohesion between the Navy and the Air Force. Joint operations are continually marked by challenges in command and control, communication, planning, and vernacular. It is important for the services to examine their past collaborative efforts so they may identify those areas that were successful and those that needed extra work. History provides lessons to those who care to learn them. The developers of AirSea Battle doctrine must apply the lessons gleaned from these short historical vignettes to the future of AirSea Battle. This will ensure the forthcoming doctrine is complete and coherent.

³⁴ Stanik, *El Dorado Canyon*, xiii.

Conclusions

War plans cover every aspect of a war, and weave them all into a single operation that must have a single, ultimate objective in which all particular aims are reconciled. No one starts a war – or rather, no one in his senses ought to do so – without first being clear in his mind what he intends to achieve by that war and how he intends to conduct it.

Carl von Clausewitz

The face of the global security environment is changing. Nations are recognizing the vulnerability of sea trade routes as they increasingly rely on free access to the global commons. At present, the economic strength of the US and its military's ability to globally project power helps bring stability to the global security environment. However, potential adversaries of the US are developing technologies to counter US power projection capabilities. Their anti-access/area-denial (A2/AD) potential represents a threat to free access of the global commons. There is no doubt that the US must ensure it is ready to counter this threat. AirSea Battle is the vehicle to counter this threat as it hinges upon joint US air and maritime power projection capabilities. What remains is the need for the US to develop an AirSea Battle doctrine as a point of departure in the event the Nation was called upon to protect the global domains. To properly develop this doctrine, the Air Force and Navy must partner in a way to maximize their capabilities. This endeavor is not without its significant challenges as each service has emerged from a doctrinally different background.

Air Force doctrine centered upon strategic bombing for most of the last century. This led to an institutional belief that, with air power alone, the Air Force could affect the decisive point in a battle and tip the scales

in such a way as to bring the entire conflict to an end. This parochial view stemmed from a need to validate the existence of the Air Force as a separate service, but it myopically devalued the importance of other aspects of air power like close air support and interdiction. At its heart, the problem centered on a supported versus supporting dilemma.

Because air power advocates strove to justify the creation of an Air Force that was separate and equal to its naval and army counterparts, the foundations of their arguments needed to omit any significant explanations of the Air Force's support of these sister services. If the Air Force directly supported the Army or Navy, then it was not a very large leap to suggest that the Air Force should exist as a subordinate arm to its supported force. Further, Air Force doctrine emphasized a clearly identified chain of command. Proper application of air power required Air Force assets to be commanded by Air Force personnel at the highest levels. This was essentially the character of the Army Air Corps in the interwar period and during World War II.

During the Cold War, AirLand Battle doctrinal development tested the resolve of the nascent Air Force. The Army and the Air Force developed doctrine at different levels within their services. In addition, the Army sought direct control over the tactical application of air power during close air support missions. These efforts put the services at odds with one another as they attempted to develop a doctrine to repel a possible invasion of Europe by Soviet Forces. Because there was no formalized method to create and codify joint doctrine, the Army included its AirLand Battle doctrine in the release of its service publications without Air Force buy-in. This essentially compelled the Air Force to work alongside its Army brethren to work out a compromise. Although this was not an insurmountable task, it was difficult. The Air Force still believed in the primacy of strategic bombing and did not want other services to command or control its assets. Ultimately, the Cold War strategic environment in Europe drove the services to rise above their

differences and planners from each service collaborated to solve the problem. The Air Force retained command and control of its assets and it set aside its strategic bombing focus to provide CAS for the Army. AirLand Battle doctrine development emerged but was thankfully never needed as the Cold War ended.

Historian Caroline Ziemke expresses these critical words about the Air Force's post-Cold War standing as a result of its single-minded doctrinal view it carried from its inception through the close of the Cold War: "...the USAF, perhaps more than any other US military service, faces the prospect of losing the foundation upon which it has based its entire institutional identity and even its very existence."¹ Upon consideration that the Air Force was reluctant to heed the tactical air campaign lessons learned from World War II and Korea, and its continued grasp without significant supporting evidence on the decisiveness of strategic bombing in Europe during WWII and in Vietnam, she adds, "This inability of the USAF to assess realistically the lessons and implications of its wartime experiences – failures along with successes – not only keeps it from facing the more difficult and sometimes painful implications of the Vietnam experience, but in the long run enervates all Air Force doctrine, strategic as well as tactical."² The Air Force's long-standing doctrinal focus on strategic bombing may undermine its strategic and operational doctrine if it is not willing to incorporate changes. The Navy also has its unique problems.

Over the last 100 years, much of the Navy's doctrine has been passed informally. This is related to the experiences of naval officers at sea. Because of the enormous reaches of the sea and the lengthy times for travel, officers were given a great deal of autonomy to execute the missions of their nations. Doctrine was passed by word-of-mouth

¹ Carolyn Ziemke, "Foreward," in Earl H. Tilford, *Setup: What the Air Force Did in Vietnam and Why* (Maxwell AFB, AL: Air University Press, 1991), ix.

² Ziemke, "Foreward," in Earl H. Tilford, *Setup*, ix.

through operational experiences gained at sea. At times, the Navy has also codified its doctrine. Very few of its doctrinal publications resemble typical codified military service doctrine. Again, these are informal in nature. They are also very tactical. According to Milan Vego, “One of the most serious problems is that the U.S. Navy...does not recognize a major operation as the main method of employment of its combat forces aimed to accomplish an operational objective in combat. Hence, it is not surprising that neither the theory nor doctrine for major naval operations currently exists.”³ Instead, the Navy focuses on control of the sea by maintaining a naval force that is vastly superior to any other in the world. Included in this force is naval aviation. Here they also differ from the Air Force. Naval aircraft exist primarily for the protection of the fleet. Although they are capable of other roles, their primary function is to be a part of the fleet and contribute to the Navy’s ability to project sea power. Perhaps the quote from Themistocles (524 – 460 B.C.) that is used in NDP 1 sums up the Navy’s perspective on sea power: “Whosoever can hold the sea has command of everything.”⁴

The lessons learned – good and bad – by the services during joint interactions in the past can greatly inform AirSea Battle doctrinal development. From Billy Mitchell’s strategic bombing advocacy and the bombing of the *Ostfriesland* to joint air operations in El Dorado Canyon and Desert Storm, the Air Force and the Navy have learned valuable lessons. Inter-service rivalries spawned from challenges to traditional missions and competition for budget allocations. Whether it was the Air Force attempting to wrest away coastal protection from the Navy in the 1920s or it was the cancellation of the flush-deck super carrier – the *United States*, specific episodes have inflamed a bitter rivalry between the services. Command and control issues plagued the services in Korea and in Vietnam. Neither wanted their forces controlled by the other. Finally,

³ Vego, “The U.S. Navy’s Capabilities and Limitations,” III-4.

⁴ Naval Doctrine Publication (NDP) 1, 3.

different technologies and vernacular made the Navy's integration into air operations during Desert Storm difficult. However, not all the examples from history are bad. Thorough planning and combined operations to achieve a common strategic objective characterized the joint successes of the Doolittle Raid, the Battle of Midway, the Battle of the Atlantic, and Operation El Dorado Canyon.⁵ It is not merely enough to learn the lessons of the past. The forthcoming AirSea Battle doctrine must also apply these lessons in an effort to avoid repeating them.

Strategic planning requires predictive thinking, and its adherents need to not only identify future conflict areas in the world and attempt to predict behaviors of potential enemies, but they also must recognize possible areas of friction within the US military organization. Because AirSea Battle is a priority at the highest levels of military and civilian leadership, it is incumbent upon the services to move beyond their institutional biases and petty parochialisms to develop a coherent joint doctrine. Each must capitalize on the individual service strengths of the other and acknowledge and mitigate their shortfalls. The Air Force must move beyond its insecurities as an independent service and be confident in the success of air power over the last 60 years. It must also be willing to accede to the Navy command and control if the mission dictates. Likewise, the Navy must put behind itself the nearly century-long rivalry and animosity it harbors towards the Air Force. Both services must set aside self-serving economic interests and seek the greater good of the Nation. In an era marked by economic hardships and dwindling budgets, the services must synergistically cooperate to maximize force projection at the minimum cost. The collaborative development of AirSea Battle doctrine will facilitate this unprecedented partnership.

⁵ The Battle of Midway was not an overwhelming joint success in that there was not careful coordinated planning. The Battle was executed in a joint fashion, although it occurred in an almost ad hoc, uncoordinated way. The end result, though, was a joint Navy, Army Air Corps, and Marine battle that led to the defeat of the Japanese forces that threatened Midway.

The prevailing argument for AirSea Battle relies on US air and naval ability to freely maneuver around the globe to achieve US national and military interests. At present, its focus is in the Western Pacific and the Indian Ocean. Jan Van Tol points out that “some of the specific initiatives deriving from a viable concept likely would be applicable elsewhere against other A2/AD capable adversaries, just as the Soviet Union represented the most severe challenge to the US Army and Air Force during the Cold War, today the PLA represents by far the most serious A2/AD challenge to the Air Force and Navy.”⁶ At the operational level of war, AirSea Battle must lay the foundation to maintain stability and a conventional military balance throughout the Western Pacific. US and allied forces must be able to deter China from acts of aggression or coercion in the Indian Ocean and the Western Pacific. If deterrence fails, the US must retain the ability to respond effectively.⁷

At its heart, AirSea Battle doctrine relies on the synergistic coordination of the US Air Force and Navy. In *AirSea Battle: A Point of Departure*, Van Tol suggests the following list for integrated air and naval operations:

1. Air Force counter-space operations to blind PLA space-based ocean surveillance systems, thereby preventing the PLA from targeting high-value Navy surface units, including carriers, thereby enabling Navy operational freedom of maneuver;
2. Navy AEGIS ships supplementing other missile-defense assets in defense of forward bases and Japan;
3. Navy submarine-based and carrier-based (if operating long-range air platforms) ISR and strike support against PLA IADS to degrade them and thereby enable Air Force strikes;

⁶ Jan Van Tol, Mark Gunzinger, Andrew Krepinevich, and Jim Thomas, *AirSea Battle: A Point-of-Departure Operational Concept* (Washington, D.C.: Center for Strategic and Budgetary Assessments, 2010), xi.

⁷ Van Tol et al., *AirSea Battle*, xi.

4. Air Force long-range penetrating strike operations to destroy PLA ground –based long-range maritime surveillance systems and long-range ballistic missile launchers;
5. Navy carrier-based fighters’ progressive rollback of PLA manned and unmanned airborne ISR platforms and fighters to enable the forward operation of Air Force tankers and other support aircraft;
6. Air Force support of the anti-submarine warfare campaign through offensive mining by stealthy bombers and persistent non-stealthy bomber strike support of navy ships conducting distant blockade operations.⁸

This list provides a good point-of-departure for joint air and naval planners to begin developing AirSea Battle doctrine. Despite its focus on the potential Chinese threat, doctrinal authors can use it to develop doctrine to address any A2/AD maritime threat. Along with the history and lessons from this work, it will empower planners to overcome inter-service challenges and create solid doctrine. “Good doctrine informs, provides a sound departure point, and allows flexibility; bad doctrine overly bounds and restricts creativity. If not properly developed, and especially if parochialism is allowed to creep in, doctrine development may yield suboptimal solutions.”⁹ Without accepting Sun Tzu’s exhortation to not only know the enemy but also know *oneself*, the worthy goal of developing AirSea Battle doctrine may be subsumed by petty economic service squabbles and anachronistic service rivalry attitudes. It is unclear exactly who the next enemy will be. It is clear, though, that if the next conflict is sea-based, it will require the unique global power projection capabilities of the US Air Force and Navy. If they challenge themselves to build bridges across parochial divides and rivalries to achieve National objectives, they *can* get along.

⁸ Van Tol et al., *AirSea Battle*, xv.

⁹ Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine*, 4.

Bibliography

Academic Papers

- Bartoli, Major John V. "Bending the Eagle's Wing: How Advanced Air Defenses Put the Enemy's Vital Centers Beyond the Reach of American Airpower." Graduation Thesis, School of Advanced Air and Space Studies, Air University, June 2010.
- Bellinger, Commander P. N. L. "Tactics." Graduation Thesis, Naval War College, 9 May 1925.
- Fondacaro, Major Steve A. "Airland Battle and SOF: A Proposal for an Interim Doctrine for Joint Special Operations." Graduation Thesis, School of Advanced Military Studies, U.S. Army Command and General Staff College, 19 May 1989.
- Lofton, Victor E. "Operational Level Propositions for the Use of Airpower in Maritime Operations (MAROPS)." Graduation Thesis, School of Advanced Air and Space Studies, Air University, June 1996.
- Moeller, Major Michael R. "The Sum of Their Fears: The Relationship between the Joint Targeting Coordination Board and the Joint Force Commander." Graduation Thesis, School of Advanced Air and Space Studies, Air University, August 1995.
- Spinetta, Major Lawrence. "'The Malacca Dilemma' – Countering China's 'String of Pearls' with Land-Based Airpower." Graduations Thesis, School of Advanced Air and Space Studies, Air University, June 2006.
- Stavridis, Commander James. "A New Air Sea Battle Concept: Integrated Strike Forces." Graduation Thesis, National War College, National Defense University, May 1992.
- Tritten, James J. "Development Issues for Multinational Navy Doctrine." Research Paper, n.d.
- Vego, Milan. "The U.S. Navy's Capabilities and Limitations." Compilation Paper, The United States Naval War College, September 2010.

Articles

- Auslin, Michael. "Beware a Hollow Air Force." *National Review Online*, 22 November 2010. <http://www.nationalreview.com/articles/print/253487> (accessed 29 Nov 10).
- Beidel, Eric. "Navy Undersecretary Bob Work: U.S. Needs Better Weapons that are also Affordable." 9 November 2010. <http://www.nationaldefensemagazine.org/blog/Lists/Posts/Post.aspx?ID=245> (Accessed 19Nov10).

- Brimley, Shawn. "Promoting Security in Common Domains." *The Washington Quarterly* 33, no. 3 (July 2010): 119-132.
- Carreno, Jose, Thomas Culora, Captain George Galdorisi, and Thomas Hone. "What's New about the AirSea Battle Concept?" *Proceedings Magazine* 136, no. 8/1,290, August 2010.
- Chase, Michael S. "Not in Our Backyard: China's Emerging Anti-Access Strategy." Policy Memo. Washington, D.C.: Progressive Policy Institute, October 2010.
- Clark, Admiral Vern. "Sea Power 21 – Projecting Decisive Joint Capabilities." *Proceedings*, October 2002.
- Cronin, Patrick M. "Restraint: Recalibrating American Strategy." Report. Washington, D.C.: Center for a New American Security, June 2010.
- Denmark, Abraham M. "Managing the Global Commons." *The Washington Quarterly* 33, no. 3 (July 2010): 165-182.
- GlobalSecurity.org, "War Plan Rainbow," <http://www.globalsecurity.org/military/ops/war-plan-rainbow.htm> (accessed 16 May 2011).
- Halloran, Richard. "AirSea Battle: A New Operational Concept Looks to Prepare the US and its Allies to Deter or Defeat Chinese Power." *Air Force Magazine* 93, no. 8 (August 2010): 44-48.
- Halloran, Richard. "PACAF's 'Vision' Thing." *Air Force Magazine* 92, no. 1 (January 2009): 54-56.
- Krepinevich, Andrew F., Jr. "The Pentagon's Wasting Assets." *Foreign Affairs* 88, no. 4 (July/August 2009): 18-33.
- Milner, Marc. "The Battle that had to be Won." *Naval History* 22, no. 3 (June 2008), <http://www.usni.org/magazines/naulhistory/2008-06/battle-had-be-won>.
- "Next Year's Wars: The 16 Brewing Conflicts to Watch for in 2011." *Foreign Policy*, 28 December 2010.
- Redford, Duncan. "Inter- and Intra-Service Rivalries in the Battle of the Atlantic." *The Journal of Strategic Studies* 32, no. 6 (December 2009): 899-928.
- Samii, Bill. "Iran: Naval Doctrine Stresses 'Area Denial.'" Washington, D.C.: Radio Free Europe/Radio Liberty, 2006.
- Tritten, James J. "Naval Doctrine...From the Sea." Norfolk, VA: Naval Doctrinal Command, December 1994.
- Tillman, Barrett. "Into the Rising Sun: The Doolittle Raid." *Proceedings Magazine*, vol. 133, no. 4, April 2007.
- Ueda, Kazuo. "Japan's Bubble, the USA's Bubble, and China's Bubble." *China & World Economy* 19, no. 1 (2011): 47-62.
- US Air Force. "History: Missions Part One – From the Signal Corps to the Air Corps." <http://www.airforce.com/learn-about/history/part1/> (accessed 15 February 2011).
- US Air Force. "History: Missions Part Two – Air Power Comes of Age in World War II." <http://www.airforce.com/learn-about/history/part2/> (accessed 15 February 2011).

- US Energy Information Administration. "Country Analysis Briefs: World Oil Transit Chokepoints." US Department of Energy, http://www.eia.doe.gov/cabs/World_Oil_Transit_Chokepoints/Full.html (Accessed 13 February 2011).
- US Energy Information Administration. "Crude Oil and Total Petroleum Imports Top 15 Countries." US Department of Energy, http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/company_level_imports/current/import.html (accessed 13 February 2011).
- US Navy. "A Brief History of U.S. Navy Aircraft Carriers Part I – The Early Years." http://www.navy.mil/navydata/navy_legacy_hr.asp?id=1 (accessed 16 February 2011).
- Winton, Harold R. "Partnership and Tension: The Army and Air Force Between Vietnam and Desert Shield." *Parameters Magazine* 26, no. 1 (Spring 1996): 100-119.

Books

- Barlow, Jeffrey G. *Revolt of the Admirals: The Fight for Naval Aviation 1945-1950*. Washington, DC: Ross & Perry, Inc., 2001.
- Clausewitz, Carl von. *On War*. Edited and translated by Michael Howard and Peter Paret. Princeton, NJ: Princeton University Press, 1976.
- Cliff, Roger, Mark Burles, Michael S. Chase, Derek Eaton, and Kevin L. Pollpeter. *Entering the Dragon's Lair: Chinese Antiaccess Strategies and Their Implications for the United States*. Santa Monica, CA: RAND Corporation, 2007.
- Clodfelter, Mark. *The Limits of Air Power: The American Bombing of North Vietnam*. 1989. Reprint, Lincoln: University of Nebraska Press, 2006.
- Douhet, Giulio. *The Command of the Air*. 1942. Edited by Joseph Patrick Harahan and Richard H. Kohn. Translated by Dino Ferrari. Tuscaloosa, AL: The University of Alabama Press, 1998.
- Finney, Robert T. *History of the Air Corps Tactical School 1920-1940*. 1955. Reprint, Bolling AFB: Air Force History and Museums Program, 1998.
- Futrell, Robert Frank. *Ideas, Concepts, Doctrine*. Vol. 1, *Basic Thinking in the United States Air Force 1907-1960*. 1989. Third Printing, Maxwell Air Force Base, AL: Air University Press, September 2001.
- Futrell, Robert Frank. *Ideas, Concepts, Doctrine*. Vol. 2, *Basic Thinking in the United States Air Force 1961-1984*. 1989. Fifth Printing, Maxwell Air Force Base, AL: Air University Press, September 2004.
- Jones, Johnny R. *Development of Air Force Basic Doctrine 1947-1992*. Maxwell Air Force Base, AL: Air University Press, April 1997.

- Kometer, Michael W. *Command in Air War: Centralized Versus Decentralized Control of Combat Airpower*. Maxwell Air Force Base, AL: Air University Press, June 2007.
- Krepinevich, Andrew F. *7 Deadly Scenarios: A Military Futurist Explores War in the 21st Century*. New York, NY: Bantam Books, 2010.
- Lambeth, Benjamin S. *The Transformation of American Air Power*. Ithaca, NY: Cornell University Press, 2000.
- Mahan, Alfred Thayer. *Mahan on Naval Strategy: Selections from the Writings of Rear Admiral Alfred Thayer Mahan*. Annapolis, MD: Naval Institute Press, 1991.
- Mahan, Alfred Thayer. *The Influence of Sea Power upon History, 1660-1783*. 5th ed. Boston: Little, Brown, and Co., 1894.
- Mitchell, William "Billy." *Winged Defense: The Development and Possibilities of Modern Air Power – Economic and Military*. 1925. Reprint, Tuscaloosa, AL: The University of Alabama Press, 2009.
- Olsen, John Andreas, ed. *A History of Air Warfare*. Dulles, VA: Potomac Books, Inc., 2010.
- Pape, Robert A. *Bombing to Win: Air Power and Coercion in War*. Ithaca: Cornell University Press, 1996.
- Romjue, John L. *From Active Defense to AirLand Battle: The Development of Army Doctrine, 1973-1982*. Fort Monroe, VA: United States Army Training and Doctrine Command, June 1984.
- Smith, Douglas V., ed. *One Hundred Years of US Navy Air Power*, Annapolis, MD: Naval Institute Press, 2010.
- Stanik, Joseph T. *El Dorado Canyon: Reagan's Undeclared War with Qaddafi*. Annapolis, MD: Naval Institute Press, 2003.
- Tilford, Earl H. *Setup: What the Air Force Did in Vietnam and Why*. Maxwell Air Force Base, AL: Air University Press, June 1991.
- Winnefeld, James A., and Dana J. Johnson. *Joint Air Operations: Pursuit of Unity in Command and Control, 1942-1991*. Annapolis, MD: Naval Institute Press, 1993.

Briefings/Point Papers/Memos/Messages/Diaries

- Bellinger, Commander Partick N. L. Statement Before the Morrow Board, Washington, D.C., 1925.
- Johnson, Admiral Jay L. "Forward...From the Sea: The Navy Operational Concept, March 1997." Air War College, Air University. <http://www.au.af.mil/au/awc/awcgate/navy/fromsea/ffseanoc.html> (accessed 3 December 2010).
- Ramsey, Lieutenant Logan C. "If it Hadn't Been for Those Marine Flyers." Account of the Exploits of Marine Aviators against "General" Augustino Sandino in Nicaragua 1927-1928. Naval Air Station Pensacola, FL, 30 June 1930.

Towers, Admiral John Henry. Diary from February 1939 to July 1945.
Research Library, National Naval Aviation Museum, Naval Air
Station Pensacola, FL.

Work, Hon. Robert O., under secretary, US Department of the Navy.
Briefing. Office of Naval Research Science and Technology
Partnership Conference, Arlington, VA, 8 November 2010.

Government Documents

Air Force Doctrine Document (AFDD) 1. *Air Force Basic Doctrine*, 17
November 2003.

Air Force Doctrine Document (AFDD) 2-1. *Air Warfare*, 22 January 2000.

Air Force Manual (AFM) 1-2, *United States Air Force Basic Doctrine*, 1
April 1955.

Air Warfare Plans Division (AWPD) 1. *Munitions Requirements of the Army
Air Force*, August 1941.

Archives Technical Intelligence Section. *Plans for Operating Aircraft
Carriers SARATOGA and LEXINGTON*. Newport, RI: Naval War
College, 25 October 1927.

Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 5705.01D.
Standardization of Military and Associated Terminology, 10
November 2010.

Defense Technical Information Center (DTIC). *Joint Doctrine Hierarchy*.
<http://www.dtic.mil/doctrine/doctrine/status.pdf> (accessed 29
November 2010).

Department of Defense (DoD). *Capstone Concept for Joint Operations
Activity Concepts Version 1.0*, 8 November 2010.

Department of Defense (DoD). *Quadrennial Defense Review Report*,
February 2010.

Department of the Navy. *Current Tactical Orders and Doctrine United
States Fleet 1941*, December 1941.

Department of the Navy. *Forward...From the Sea*, 1994.

Department of the Navy. *Naval Transformation Roadmap: Assured Access
& Power Projection...From the Sea*, 2003.

Department of the Navy. *Naval Transformation Roadmap: Power and
Access...from the Sea*, 2004.

Department of the Navy. *War Instructions*, 1934.

Department of the Navy. *War Instructions*, 1944.

Goldwater-Nichols Department of Defense Reorganization Act of 1986.
Public Law 99-433. 99th Congress, 1 October 1986.

Homeland Security Presidential Directive (HSPD) 13. *The National
Strategy for Maritime Security*, September 2005.

Joint Publication (JP) 1-02. *Department of Defense Dictionary of Military
and Associated Terms*, 12 April 2001.

Joint Publication (JP) 3-0. *Joint Operations*, 17 September 2006.

Joint Publication (JP) 3-01. *Countering Air and Missile Threats*, 5 February 2007.

Joint Publication (JP) 3-02. *Amphibious Operations*, 10 August 2009.

Joint Publication (JP) 3-03. *Joint Interdiction*, 3 May 2007.

Joint Publication (JP) 3-05. *Doctrine for Joint Special Operations*, 17 December 2003.

Joint Publication (JP) 3-30. *Command and Control for Joint Air Operations*, 12 January 2010.

Joint Publication (JP) 3-31. *Command and Control for Joint Land Operations*, 29 June 2010.

Joint Publication (JP) 3-32. *Command and Control for Joint Maritime Operations*, 8 August 2006.

Joint Publication (JP) 5-0. *Joint Operation Planning*, 26 December 2006.

Naval Doctrine Publication (NDP) 1. *Naval Warfare*, 28 March 1994.

Naval Doctrine Publication (NDP) 2. *Naval Intelligence* (no document date).

Naval Doctrine Publication (NDP) 6. *Naval Command and Control*, 19 May 1995.

Naval Operational Concept (NOC) 2010. *Implementing the Maritime Strategy*, 2010.

US Senate. *Defense Transformation: Andrew F. Krepinevich Testimony to US Senate Committee on Armed Services*, 9 April 2002.

Reports

A Vision for Air Force Science & Technology During 2010-2030, Volume 1. AF/ST-TR-10-01-PR Report on Technology Horizons. Washington, D.C.: United States Air Force Chief Scientist (AF/ST), 15 May 2010.

Bates, Richard W. *The Battle of Midway Including the Aleutian Phase, June 3 to June 14, 1942.* Report on Strategic and Tactical Analysis. Newport, RI: U.S. Naval War College, 1948.

Krepinevich, Andrew F. and Robert O. Work. *A New Global Defense Posture for the Second Transoceanic Era.* Washington, D.C.: Center for Strategic and Budgetary Assessments, 2007.

Krepinevich, Andrew F. *A New Navy for a New Era.* Washington, D.C.: Center for Strategic and Budgetary Assessments, May 1996.

Krepinevich, Andrew F., Barry Watts, and Robert O. Work. *Meeting the Anti-Access and Area-Denial Challenge.* Washington, D.C.: Center for Strategic and Budgetary Assessments, 2003.

Krepinevich, Andrew F. *Transforming to Victory: The U.S. Navy, Carrier Aviation, and Preparing for War in the Pacific.* Washington, D.C.: Center for Strategic and Budgetary Assessments, 2000.

- Krepinevich, Andrew F. *Why AirSea Battle?* Washington, D.C.: Center for Strategic and Budgetary Assessments, 2010.
- Sitz, Captain W. H. *A History of U.S. Naval Aviation*. United States Navy Department Bureau of Aeronautics Technical Note No. 18, Series of 1930. Washington, DC: United States Government Printing Office, 1930.
- Stokes, Mark A. and Ian Easton. *Evolving Aerospace Trends in the Asia-Pacific Region*. Arlington, VA: Project 2049 Institute, 27 May 2010.
- Van Tol, Jan, Mark Gunzinger, Andrew Krepinevich, and Jim Thomas. *AirSea Battle: A Point-of-Departure Operational Concept*. Washington, D.C.: Center for Strategic and Budgetary Assessments, 2010.

Speeches

- Gates, Robert M., Secretary of Defense, United States. Address. Air Force Association Convention, Washington, D.C., 16 September 2009.
- Moffett, Rear Admiral W. A., chief, Bureau of Aeronautics. Lecture Delivered at the Army War College, Washington Barracks, D.C., 10 November 1925.
- Mullen, Admiral Michael G., chairman, United States Joint Chiefs of Staff. Address. United States Air Force Academy 2010 Graduation, Colorado Springs, CO, 26 May 2010.
- Schwartz, General Norton A., chief of staff, US Air Force. Air and Space Conference Keynote Speech. Air Force Association Convention, Washington, D.C., 14 September 2010.
- Schwartz, General Norton A., chief of staff, US Air Force. Newsmaker Luncheon. National Press Club, Washington, D.C., 12 October 2010.
- Winter, Donald C., Secretary of the Navy, United States. Address. House Armed Services Committee, Washington, D.C., 1 March 2007.